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REPORT

ON THE

SCIENTIFIC RESULTS

OF THE

VOYAGE OF H.M.S. CHALLENGER

DURING THE YEARS 1873-76

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PACIFIC OCEANIC FISHERY
INVESTIGATIONS

UNDER THE COMMAND OF

CAPTAIN GEORGE S. NARES, R.N., F.R.S.

AND THE LATE

CAPTAIN FRANK TOURLE THOMSON, R.N.

PREPARED UNDER THE SUPERINTENDENCE OF

THE LATE

Sir C. WYVILLE THOMSON, Knt., F.R.S., &c.

REGIUS PROFESSOR OF NATURAL HISTORY IN THE UNIVERSITY OF EDINBURGH
DIRECTOR OF THE CIVILIAN SCIENTIFIC STAFF ON BOARD

AND NOW OF

JOHN MURRAY

ONE OF THE NATURALISTS OF THE EXPEDITION

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BOTANY—VOL. I.

PART II.—REPORT ON THE BOTANY OF ST PAUL'S ROCKS, FERNANDO-NORONHA, ASCENSION, ST HELENA, SOUTH TRINIDAD, TRISTAN DA CUNHA, PRINCE EDWARD GROUP, CROZETS, KERGUELEN, MACDONALD GROUP, AMSTERDAM, AND ST PAUL ISLANDS

5.8

BY WILLIAM BOTTING HEMSLEY, A.L.S.

UNITED STATES COMMISSION
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EDITORIAL NOTES.

This Report on the Botany of St Paul's Rocks, &c., is the second part of the Botanical Series of Reports on the Scientific Results of the Expedition, and forms one of a series of Reports dealing with Insular Floras.

Botanical notes for the guidance of the Naturalists of the Expedition were prepared at the Royal Gardens, Kew, previous to the departure of the Challenger, and were incorporated in the instructions drawn up by the Circumnavigation Committee of the Royal Society.[1]

The botanical collections of the Expedition referred to in this Report were made by Mr H. N. Moseley during the cruise, and despatched direct to Kew from various ports touched at by the Expedition. Preliminary notices of these collections, and notes by Mr Moseley on the general aspects of the vegetation of many of the places visited, were from time to time published in the Journal of the Linnean Society.[2]

The Continental botanical collections made during the voyage being very fragmentary, it was determined to limit these Reports to a review of the Insular Floras which came within the range of the Expedition, combining for this purpose the materials already in existence at the Royal Gardens, Kew, and at the British Museum, with the new facts brought to light by the Challenger collections.

The task of preparing these Reports dealing with the Insular Floras was, on the recommendation of Sir Joseph D. Hooker, K.C.S.I., C.B., F.R.S., intrusted to Mr William Botting Hemsley, A.L.S., who writes—

"When asked whether I would undertake to report on the Botany of the Challenger Expedition, the report to be restricted to Insular Floras, I unhesitatingly replied in the affirmative, because I felt assured of the friendly assistance not only of the botanists at Kew and the British Museum, but also of various specialists in cryptogamic botany. In

[1] Narr. Chall. Exp., vol. i., 1885, p. 27 *et seq.*

[2] For a list of these publications see Narr. Chall. Exp., Bibliography, Appendix VI. pp. 1053–1063.

this I was not mistaken; and it is now a pleasant duty to record my obligations and convey my thanks to those gentlemen to whom I am indebted for giving me the benefit of their experience, and thereby adding greatly to the value of my work. From long association with Sir Joseph Hooker in botanical work I had become, through his influence, particularly interested in the study of Insular Floras—an interest first awakened when I had the advantage of examining with him, now more than twenty years ago, a large number of New Zealand plants in connection with his Handbook of the Flora; but it was only as I advanced with my present work that I more fully realised the difficulties of the task before me, and the impossibility, notwithstanding that I was receiving so much help from others, of my being able to accomplish it in a manner wholly satisfactory to myself. As I proceeded, facts accumulated to an unexpected extent, and the number of questions and issues involved increased at every step. At first I was rather inclined to speculations; but I soon became aware that a careful collection of facts, and a conscientious examination of the evidence upon which certain theories and statements connected with Insular Floras had been founded, would be of more value than a speculative treatment of the subject. Imbued with this idea, I have to a great extent left the facts to speak for themselves; yet, without attempting a final solution of the many problems which I encountered, I have not altogether abstained from expressing my own opinions, nor from pointing out what appeared to me the correct deductions from the facts adduced. This change in the method of treatment will explain any little inequalities in the work, because the first part was printed before the writing of the second was finished, and the second was printed before the writing of the third was begun, while the Introduction was mainly written after the whole of the other was in type.

"Due acknowledgment has been made in the proper places of information extracted from published works and unpublished documents, as well as to contributors of dried plants from the various islands, so that it only remains for me to mention those who have afforded me active help—help which has saved me from many a pitfall, and largely compensated for my own inexperience in some branches of botany, and for which I am glad of this opportunity of expressing my sincere thanks.

"The work was intrusted to me under the superintendence of Sir Joseph Hooker, and I am under special obligations to him for his guidance, for placing at my disposition all his notes and references relating to Insular Floras, and also for reading the proofs as they issued from the press. I had hoped that he himself would write the Introduction, but his multifarious duties rendered it impracticable. Professor Oliver's aid I cannot overestimate, for he has throughout permitted me to consult him upon points of detail as they arose, and as we were usually working in the same room I have profited by it on numberless occasions. Mr W. T. Thiselton Dyer, who has taken the greatest interest in the work from the beginning, has also read the proofs and assisted me in many ways, more especially in searching out interesting facts bearing upon my subject from the voluminous official

correspondence at Kew. Mr J. G. Baker has given me direct help in drawing up the lists of ferns; Mr Mitten in mosses and liverworts; the Rev. J. M. Crombie in lichens, and Dr M. C. Cooke in fungi; and these gentlemen, together with the Rev. M. J. Berkeley, Dr Nylander, the late Professor G. Dickie, and Dr Reinsch, have between them named all the cryptogams. In some instances I have ventured to add references to descriptions, and to give some of the more important synonyms, as well as the distribution of the species; but I have been careful to discriminate between their work and my own in order that they should not suffer from any errors into which I may have fallen. As mentioned elsewhere, Mr Carruthers and Mr Britten spared themselves no trouble in searching through the earlier collections at the British Museum, especially the Sloane Herbarium, for plants coming within the scope of my work; and I may add that more use might have been made of the British Museum collections of Polynesian plants, but as I had to deal with such a very small fragment of the Flora (Admiralty Islands only) it was not thought necessary, especially as Seemann enumerates, in his Flora Vitiensis, all the species he met with in the British Museum Herbarium. His work, however, is in a measure supplemented by a number of unpublished lists of comparatively recent collections of insular plants at Kew, partly in the general Introduction, and partly in the Report on the Botany of the South-eastern Moluccas.

"Finally, it gives me much pleasure to mention that Miss Matilda Smith has taken great pains with the drawings made from dried plants, and especially with the dissections of the flowers.

"With regard to the details nothing more need be said here, as everything is explained that seemed to require explanation in the body of the work. I may repeat, however, that full references are given in only one place for such plants as occur in more than one of the florulas contained in each part of the Reports."

The manuscript of this Report was received by me on the 16th April 1884.

JOHN MURRAY.

CHALLENGER OFFICE, 32 QUEEN STREET,
EDINBURGH, 1*st June* 1885.

THE

VOYAGE OF H.M.S. CHALLENGER.

BOTANY.

REPORT on the Botany of the Bermudas and various other Islands of the Atlantic and Southern Oceans. By W. Botting Hemsley, A.L.S.

SECOND PART.

ST PAUL'S ROCKS.

INTRODUCTORY NOTES.

These rocks lie in about 29° W. long. and 1° N. lat., and are about 540 miles distant from the coast of South America, and 350 miles from the island of Fernando-Noronha. They are scarcely more than half a mile in circumference, and their highest point is only sixty-four feet above sea-level. The group resembles a horse-shoe in shape, and consists of five peaks of rock disposed in four principal masses; and the rocks have been classed as serpentine.[1] They support absolutely no vegetation beyond a few algæ. Various travellers have landed, though even in ordinary weather there is some difficulty in doing so, in consequence of the great rapidity of the current on the one side and the heavy swell in the most sheltered parts. Mr Moseley appears to be the only person who has collected what the rocks offer in the form of vegetable life, and his account of the visit of the expedition in the Journal of the Linnean Society of London (xiv. p. 354), which is here reproduced, embodies all that is known of their botany:—

"Darwin, in his Naturalist's Voyage, describes the utterly barren condition of St Paul's Rocks as far as vegetation is concerned, not even a single lichen having been found by him. He speaks

[1] For a full account of the Petrology of these Rocks, see Narr. Chall. Exp., vol. ii., Appendix B.; and vol. i. chap. vi.

further of innumerable kinds of sea-weed as growing upon the rocks. Mr McCormick, in Ross's Antarctic Voyage, speaks of a conferva of which the sea-birds build their nests. Sir Joseph Hooker, in his Flora Antarctica, refers to Darwin's admirable account of the island.

"I spent about twenty-four hours on the rocks during our two days' stay, and searched carefully for botanical specimens. The sea-weeds, instead of being present in innumerable kinds, are, as far as I could ascertain, comparatively few in number, very few species apparently being able to hold their own in the constant heavy surf.

"About tide-mark, and indeed forming the mark, there is, as at St Vincent, a band of dense pinkish-white incrustation, consisting of a calcareous alga, which is bored in all directions by a small tubicolous annelid. This is evidently the reddish band referred to by Mr McCormick as the work of coral insects. In some places the incrustation is white, with a different surface, and probably consisting of a different species of alga.[1] Above the line of incrustation the rocks are covered for several feet with a dark red stain, consisting of an alga[2] of which specimens were preserved in fluid; and here, where the rock is alternately covered and left bare by the surf, grows a short filamentous alga, which has tufts of a green conferva adhering to it. The rocky bottom in the small, comparatively sheltered bay formed by the circlet of rocks is covered with a dense growth of a green alga, which extends out a short distance beyond the mouth of the bay to the depth of twenty fathoms (whence I got up specimens on a fishing-line), and also grows abundantly on the exposed side of the island, as I saw on looking down into the water from the summit of the highest peak. The alga (*Caulerpa clavifera*) is constantly loosened by the surf from the bottom, and, floating to the surface, is gathered by the noddies (*Sterna stolida*) to build their nests; the boobies (*Sula fusca*) apparently do not use it. A second smaller but similar species grows with this alga in the bay. I found only one or two other algæ, and when looking down into the water from above could see only the larger green species covering the bottom. The water deepens so very rapidly around the rock that it is improbable that many species of algæ grow on it; in fact, the marine flora seems to be remarkably poor.

"On the aerial surface of the rock I found a green *Chlorococcus* growing in sheltered crevices, on concretionary masses formed of guano mixed with the pupæ of the pupiparous fly *Olfersia*, discovered by Darwin on the island, and spiders' webs. The *Chlorococcus* is the only aerial plant on the island, and it is not abundant. In some pools of stagnant water are some few diatoms and *Oscillatoriæ*. In some places there are a few bushels of guano to be found in hollows in the rock. I boiled some of this with nitric acid; it was almost wholly soluble, and I could find no diatoms in the small residue. Peruvian guano contains abundance of diatoms. A *Coscinodiscus* has occurred sparingly of late upon the surface of the sea; and it might have been expected to find its way through the small surface-animals into the fish and thus into the guano. Diatoms have as yet, however, never been abundant either at the surface or on the sea bottom. In the curious veins of conglomerate which traverse the rock in all directions, and are described by Darwin and Mr McCormick, are fossil fragments of nulliporic incrustation mingled with pebbles and broken shells." —*H. N. Moseley.*

Altogether only seventeen species of vegetable organisms have been collected on and in the vicinity of the Rocks, and they are all algæ.

[1] *Lithothamnion polymorphum.* [2] *Hildenbrandtia expansa.*

ENUMERATION OF THE PLANTS.

ALGÆ.

MELANOSPERMEÆ.

Sporochnaceæ.

Chnoospora atlantica, J. G. Agardh.

Chnoospora atlantica, J. G. Agardh, Alg. Liebm., p. 7; Dickie in Journ. Linn. Soc. Lond., xiv. p. 356.

Chnoospora fastigiata β atlantica, J. G. Agardh, Sp. Alg., i. p. 172; Harv., Nereis Bor.-Am., i. p. 79.

St Paul's Rocks. *Moseley.*

A very slender form, the peculiar dilatations below the axils of the segments only here and there apparent.

La Guayra, Venezuela; Fernando-Noronha.

Dictyotaceæ.

Dictyota cuneata, n. sp.?

Dictyota cuneata, n. sp.? Dickie in Journ. Linn. Soc. Lond., xiv. p. 356.

Radicans inferne, attenuata; segmentis paucis, sursum dilatatis, apicibus obtusis rotundatis. Fructus?

St Paul's Rocks. *Moseley.*

Hitherto not found elsewhere.

Nearest in habit to *Dictyota polycarpa*.

Ectocarpaceæ.

Ectocarpus breviarticulatus, J. G. Agardh.

Ectocarpus breviarticulatus, J. G. Agardh, Alg. Liebm., p. 7, et Sp. Alg., i. p. 16; Dickie in Journ. Linn. Soc. Lond., xiv. p. 356.

St Paul's Rocks. *Moseley.*

Very plentiful, growing upon the *Chnoospora*.

"On some of the specimens I found the propagula abundant, and evidently mature; in form and size I can see no essential difference between them and those of *Ectocarpus simpliciusculus*, K. A. Agardh."—*Dickie.*

San Augustin, on the Pacific coast of Mexico, is the only other locality recorded for this species.

RHODOSPERMEÆ.

Corallinaceæ.

Lithothamnion polymorphum, Linn.

Lithothamnion polymorphum, Linn.; J. G. Agardh, Sp. Alg., ii. p. 524; Dickie in Journ. Linn. Soc. Lond., xiv. p. 356.
Melobesia polymorpha, Harv., Nereis Austr., p. 110.

St Paul's Rocks. *Moseley.*

Abundant, forming a distinct band along the rocks; the *Chnoospora* at a rather higher level.[1]

Atlantic and Mediterranean shores; South Africa; Chonos Archipelago.

Melobesia lichenoides, Kütz.

Melobesia lichenoides, Kütz., Sp. Alg., p. 697; Dickie in Journ. Linn. Soc. Lond., xiv. p. 357.

St Paul's Rocks. *Moseley.*

Sparingly with the *Delesseria* and *Nitophyllum.*

Shores of Britain and France; various parts of Mediterranean; Norfolk Island; Southern Ocean.

Sphærococcoideæ.

Delesseria spathulata, Sonder?

Delesseria spathulata, Sonder? Dickie in Journ. Linn. Soc. Lond., xiv. p. 357.

St Paul's Rocks. *Moseley.*

"Only two or three imperfect specimens mixed with the *Nitophyllum;* half an inch long by about a line in breadth. I could see no fruit, and can only judge from outline, venation, and general arrangement of the cells that it may be a form of Sonder's plant."—*Dickie.*

East coast of Australia.

[1] "Most of the specimens were drilled throughout by various organisms. A few fragments were sent to Dr M'Intosh of Murthly, and Mr Jeffreys. They report the presence of sponge, a mollusk allied to *Vermetus, Stoa,* and *Spiroglyphus,* and annelids belonging to the genera *Dodecacaria* and *Sabella.*"—*Dickie.*

Nitophyllum acrospermum, J. G. Agardh.

Nitophyllum acrospermum, J. G. Agardh, Sp. Alg., ii. p. 655; Dickie in Journ. Linn. Soc. Lond., xiv. p. 357.

St Paul's Rocks. *Moseley.*

"The specimens few and not well preserved; but on some the tetraspores form a solitary circular patch near the apex of the frond, and in other respects agree with the general characters of the species."—*Dickie.*

Cape of Good Hope.

Squamarieæ.

Hildenbrandtia expansa, n. sp.

Hildenbrandtia expansa, n. sp., Dickie in Journ. Linn. Soc. Lond., xiv. p. 357.

Incrustans, vage expansa, ferrugineo-sanguinea; cellulæ superficiales radiatim dispositæ, sphærosporis irregulariter divisis.

The cells of the surface have a distinctly radiate arrangement, are equal in length and breadth, in diameter = 0·0002 to 0·0004 of an inch. The plant is stated by Mr Moseley to form a dull red band on rocks above the white band of *Lithothamnion.* Its nearest ally seems to be *Hildenbrandtia rosea*, Kütz., which occurs on the Atlantic shores of Europe.

St Paul's Rocks. *Moseley.*

Only known from these rocks.

Ceramiaceæ.

Callithamnion?

Callithamnion?,

St Paul's Rocks. *Moseley.*

"In small quantity, forming a slender fringe about two lines long upon a few plants of the *Chnoospora;* no fruit, and altogether too imperfect for recognition; it seems, however, nearly allied to *Callithamnion pygmæum*, Kütz."—*Dickie.*

Chlorospermeæ.

Siphonaceæ.

Caulerpa webbiana, Mont.

Caulerpa webbiana, Mont., Phytogr. Canar., p. 178, t. 9, et Syll. Gen. et Sp. Crypt., p. 453; Dickie in Journ. Linn. Soc. Lond., xiv. p. 358.
Chauvinia webbiana, Kütz., Sp. Alg., p. 499.

St Paul's Rocks. *Moseley.*

Canary Islands; Fernando-Noronha.

Caulerpa clavifera, K. A. Agardh.

Caulerpa clavifera, K. A. Agardh, Sp. Alg., i. p. 437; Dickie in Journ. Linn. Soc. Lond., xiv. p. 358.
Chauvinia clavifera, Kütz., Sp. Alg., p. 498.

St Paul's Rocks. *Moseley.*

"The leaves, commonly so called, are longer in proportion and more densely imbricated than usual; in these respects the specimens collected by Mr Moseley are nearly allied to *Caulerpa lætevirens*, Mont., from Toud Island, Southern Ocean, of which I have not seen any authentic specimens. It appears to be plentiful and of large size, and is used by *Sterna stolida* to form its nests."—*Dickie.*

Ulvaceæ.

Prasiola minuta, n. sp.?

Prasiola minuta, n. sp.? Dickie in Journ. Linn. Soc. Lond., xiv. p. 358.

Thallo e basi angustata lineari-lanceolato; cellulis subquadratis, in basi 1–3, sursum 5–6 seriatis.

A very minute species, only detected by use of the microscope; no example quite entire could be seen; diameter of the broadest frond = 0·0014 of an inch.

St Paul's Rocks.—In stagnant rock-pools among fine mud—*Moseley.*

Oscillatoriaceæ.

Oscillaria sordida, n. sp.?

Oscillaria sordida, n. sp.? Dickie in Journ. Linn. Soc. Lond., xiv. p. 358.

Trichomatibus sordide viridibus, ad apicem obtusis, articulis quam diameter (0·0004) quadruplo brevioribus, ad genicula paulo contractis.

St Paul's Rocks. *Moseley.*

Sparingly and very fragmentary along with the *Prasiola.*

Palmellaceæ.

Protococcus affinis, n. sp.?

Protococcus affinis, n. sp.? Dickie in Journ. Linn. Soc. Lond., xiv. p. 358.

Protococcus sordide viridis, cellulis globosis (diam. = 0·0002 in.–0·0004 in.), in stratum tenue cumulatis.

St Paul's Rocks. *Moseley.*

"It seems to be nearly allied to *Protococcus viridis*, Ag. It forms a dull green coat upon stalactitic masses among guano in sheltered crevices."[1]—*Dickie.*

[1] "This is doubtless similar to the matter alluded to by Mr Darwin 'as resembling some of the branched species of nullipore.' It does not effervesce in acids; and Mr Darwin found it on the Abrolhos Islands among birds' dung."—*Dickie.*

DIATOMACEÆ.

Navicula didyma, Kütz.

Navicula didyma, Kütz., Bacill., p. 100, t. 4, fig. 7, et t. 28, fig. 75; Sp. Alg., p. 83; Dickie in Journ. Linn. Soc. Lond., xiv. p. 359.

ST PAUL'S ROCKS. *Moseley.*

North America.

Rhambdonema adriaticum, Kütz.

Rhambdonema adriaticum, Kütz., Bacill., p. 126, t. 18, fig. 7, et Sp. Alg., p. 116; Dickie in Journ. Linn. Soc. Lond., xiv. p. 359.

ST PAUL'S ROCKS. *Moseley.*

Adriatic; Mediterranean; Black Sea.

Biddulphia pulchella, Gray.

Biddulphia pulchella, Gray; Dickie in Journ. Linn. Soc. Lond., xiv. p. 359.
Biddulphia trilocularis, Kütz., Sp. Alg., p. 137.

ST PAUL'S ROCKS. *Moseley.*

West Indies and coast of Peru.

These are the only diatoms observed; they were procured by washing some specimens from the nests of the *Sterna;* guano from the same might have yielded other species.

FERNANDO-NORONHA AND CONTIGUOUS ISLETS.

INTRODUCTORY NOTES.

Previously to the visit of the Challenger Expedition little was known of the botany of Fernando-Noronha, and from circumstances explained below Mr Moseley was only able to bring away specimens of a small number of plants.

In the Appendix to Webster's narrative of Captain Foster's voyage in the "Chanticleer"[1] are some general observations on the vegetation of the island, but nothing exact. It was also one of the places at which H.M.S. "Beagle" touched, and Mr Darwin mentions[2] one or two of the more striking trees, &c. He also dried specimens of about a dozen of the plants met with, which he gave to the late Professor Henslow. They are now in the Herbarium of Cambridge University, and through the kindness of Professor Babington we have been able to examine them. Two of them, *Oxalis noronhæ* and *Pisonia darwinii*, were undescribed, and are apparently endemic. The former was also collected by Mr Moseley. Altogether, Mr Moseley collected about fifty species of flowering plants, and had not the Governor withdrawn his permission to collect on the main island, the collection would have been much larger. It is large enough, however, to give a correct idea of the composition of the flora. With the exception of the two plants named above and *Cereus insularis*, *Gonolobus micranthus*, and *Ficus noronhæ*, which we have not been able to match with any continental forms, almost every one is exceedingly common in Tropical America, if it has no wider range of distribution. The four new species collected by Mr Moseley are all from an outlying islet, St Michael's Mount, and not from the main island; and one of them, as already mentioned, was collected by Mr Darwin, most likely in Fernando-Noronha itself. Judging, then, from the sample we have seen, the flora is wholly Tropical American, with no greater infusion of peculiar species than would be found in a similar area on the mainland. The new species exhibit no striking characteristics; and it is not probable that further exploration would lead to the discovery of a specially insular endemic element; for Mr Moseley believes that he nearly exhausted the flora of St Michael's Mount. A surprising and noteworthy feature in the flora is the apparently total absence of ferns and mosses.

[1] Voyage of the "Chanticleer," London, 1834.

[2] Journal of Researches, 2d ed., p. 11.

With a few trifling alterations and corrections, Mr Moseley's notes[1] on the plants are reproduced below:—

"Fernando-Noronha is in 3° 50′ S., and is about 200 miles from Cape San Roque, the nearest point of South America. The main island is about four miles in length, and nowhere more than four and a half broad, and the length of the group formed by it and its outliers is seven geographical miles. It stretches nearly north-east and south-west, and at its eastern extremity is a series of very small islands, named Platform Island, St Michael's Mount, Booby Island, Egg Island, and Rat Island.

"At about the middle of the northern coast of the main island is a remarkable column-like mass of bare rock projecting up to the height of 1000 feet. It is known as the Peak, which is composed of phonolite; and the island generally is volcanic, many of the exposed cliffs evidently consisting of columnar basalt. There are dunes of calcareous sand at the eastern extremity of the island, and some sand-rock like that of Bermuda. The island is hilly, one hill being 600 feet in height. St Michael's Mount is a conical mass of phonolite 300 feet in height. The other islands are low and flat, and are mainly or entirely composed of sandstone rock like that of Bermuda, but containing volcanic particles.

"There is a rainy and a dry season. The rainy season is from January to July, and the dry from July to December. In the dry season there is occasionally want of water; but it often rains during this season, as it did heavily during our stay.

"Apparently the only account of the vegetation of Fernando-Noronha existing is that given by Webster in his narrative of Captain Foster's voyage. He mentions a series of plants as occurring, most of which I recognised. Darwin in his Journal mentions only two plants—a dark laurel-like tree, and one with pink flowers, but without leaves. All the higher ground of the island, where not cleared for cultivation, with the exception of the perpendicular part of the Peak, is covered with a thick growth of trees, which are indicated on the Admiralty chart. The trees are none of them large; all the large ones have been cut down, it is said, by the convicts for the construction of the small rafts or catamarans which are used by them for fishing. The trees are overgrown with dense masses of creepers of various kinds. The plant-growth is thickest, and apparently virgin, at the western extremity of the island, near the opening through the rock called the Hole-in-the-Wall. The commonest tree is that called by Webster the laurelled Bara. It has dark-green laurel-like leaves and an abundant milky juice, and the bark is smooth and brown. I could find no flower or fruit on the tree, but did not search much, since I expected to be able to collect specimens next day. I unfortunately did not even secure a leaf. The tree, which is evidently the laurel-like tree referred to by Darwin, does not grow on any of the outlying islands. Another abundant tree, or rather large shrub, is the one called by Webster jatropha or pinhao, *Jatropha gossypifolia*. It has a pink flower, and had only single tufts of young leaves immediately beneath the inflorescences at the time of our visit, although it was in full flower. Its bare stems and branches render it a striking object amongst the green of the creepers when the forest is viewed from the sea. Webster says that it casts its leaves in July and August, that is, at the commencement of the dry season. It is evidently the tree mentioned by Darwin as occurring on the Peak; and it also grows on St Michael's Mount and Rat Island. On the main island I saw several specimens of an apparently Euphorbiaceous tree, with rounded leaves of a bluish-green and stout thorns. I looked for flowers

[1] *Journal of the Linnean Society of London*, xiv. p. 359.

and fruit without success. One of the trees was about twenty feet high and nine inches in diameter of trunk. Some thorny acacia bushes are abundant on the shore, and *Abrus precatorius* twines round everything on the main island; but I did not see it on the outliers. *Jatropha urens* is abundant everywhere, and a horrible pest.

"*Ipomœa pes-caprœ*, the same as at Bermuda and the Cape Verdes, is in abundance on the sand-hills, and is covered with *Cuscuta americana*, which is extremely abundant, and attacks most of the low herbs.

"I saw only one grass (*Oplismenus colonus*) on the main island, but that was abundant. *Cereus insularis* covers the cliffs; but I did not see anything answering to the *Cactus quadrangularis* mentioned by Webster. The Cape gooseberry and castor-oil plant grow wild on all the islands. Some few of the plants which I collected on the main island were from the neighbourhood of the convict settlement, and are probably introduced species.

"The upper part of St Michael's Mount is covered with a thick growth of bushes, trees, and creepers. The island is comparatively inaccessible, and affords no space for cultivation; hence all the plants upon it have probably reached it through natural agencies. I was several hours on this island, and believe that I made a tolerably complete collection of its flora. At the base of the rock grows an *Ipomœa* with a large white flower. I did not see this species on the main island, but only the blue-flowered one, *Ipomœa pes-caprœ*, which does not grow on St Michael's Mount or any of the other outliers on which we landed, although this white-flowered species is abundant on all of them. A fig, *Ficus noronhæ*, grows all over the upper part of St Michael's, and in favourable spots forms a considerable tree. I saw one about eighteen inches in diameter of trunk and thirty feet in height. The tree is wide and spreading, and throws down aerial roots like *Ficus indica*. Webster mentions the banyan as growing at Fernando-Noronha: this is evidently the tree referred to. It grows also on Rat Island near the sea-level, but does not there form a tree, being merely a low bush. Another tree, *Capparis cynophallophora*, with dark-green leaves of an oval lanceolate form, grows abundantly on the summit of St Michael's Mount. It has a stem about eight or nine inches in diameter, and an almost creeping habit. On Rat Island there is a thick growth of grass with clinging seeds mingled with Leguminous and Euphorbiaceous herbs and Cucurbitaceous creepers; but there is no tree, there not being sufficient shelter from the wind. The fig does not reach more than five or six feet in height.

"On the whole, I should expect, from what I saw during my few hours on the islands, that the flora of Fernando-Noronha is not very rich in species, the same plants recurring everywhere. I collected only about fifty species of flowering plants in all.

"I found neither fern nor moss, either on the mainland or on St Michael's Mount, although there are moist and shady spots about the latter rock where ferns might grow. Lichens were very scarce. I noticed only two incrusting species, and these were not abundant.

"There is a small inland lake marked on the chart at the western extremity of the main island. Ferns, sedges, &c., may possibly grow there; but perhaps the occasional drought is too much for them.

"The top of the Peak, which is quite inaccessible, appears to be without vegetation. Marine algæ, excepting incrusting calcareous forms, are not at all abundant about tide-mark; but about twenty-four species were obtained by Professor Thomson whilst dredging in shallow water, from seven to twenty fathoms. A green *Ulva* grows on some low rocks on the sandy northern beach.

"Sugar-cane, maize, cassava, a black bean, and sweet potatoes are cultivated in Fernando-

Noronha, the beans and maize in the greatest quantities. Bananas and melons are the principal fruits; the latter are especially fine and abundant. Grapes are not now cultivated, though they are said to do well."

Mr Moseley mentions a few common plants which are not included in our enumeration, simply because we have not seen specimens.

In Kew Herbarium there is a specimen of *Capparis cynophallophora* collected by a Captain Middleton, and there may be a few others scattered through the Herbarium in the South American covers.

ENUMERATION OF THE PLANTS.

PHANEROGAMÆ.—DICOTYLEDONES.

CAPPARIDEÆ.

Capparis cynophallophora, Linn.

Capparis cynophallophora, Linn., Sp. Pl., ed. 1, p. 504; DC., Prodr., i. p. 249; Jacq., Sel. Stirp. Amer., t. 98; Griseb., Fl. Brit. W. Ind., p. 18 (varietates).

Fernando-Noronha. *Middleton; Darwin; Moseley.*

Very widely dispersed in Tropical America, especially in maritime districts.

PORTULACEÆ.

Portulaca oleracea, Linn.

Portulaca oleracea, Linn., Sp. Pl., ed. 1, p. 445; DC., Prodr., iii. p. 353; Griseb., Fl. Brit. W. Ind., p. 57.

Fernando-Noronha. *Moseley.*

In nearly all tropical and subtropical countries, especially in maritime districts.

Talinum patens, Willd.

Talinum patens, Willd., Sp. Pl., ii. p. 863; Jacq., Hort. Vindob., ii. t. 151.
Portulaca paniculata, Griseb., Fl. Brit. W. Ind., p. 57.

Fernando-Noronha. *Moseley.*

In maritime districts chiefly, from Mexico and the West Indies to Buenos Ayres.

MALVACEÆ.

Sida spinosa, Linn.

Sida spinosa, Linn., Sp. Pl., ed. 1, p. 683; Griseb., Fl. Brit. W. Ind., p. 74.

Fernando-Noronha. *Moseley.*

Very common in the warmer parts of America, and generally dispersed in the tropics of the Old World.

Malachra radiata, Linn.

Malachra radiata, Linn., Syst. Veg., p. 518; DC., Prodr., i. p. 440; Griseb., Fl. Brit. W. Ind., p. 81.

Fernando-Noronha. *Moseley.*

Widely dispersed in Tropical America.

STERCULIACEÆ.

Waltheria americana, Linn.

Waltheria americana, Linn., Sp. Pl., ed. 1, p. 637 (including W. Indies, Linn.); Griseb., Fl. Brit. W. Ind., p. 95.

Fernando-Noronha. *Darwin; Moseley.*

Generally spread in warm countries.

GERANIACEÆ.

Oxalis noronhæ, Oliver, n. sp.

Frutex erectus, 1–2 pedalis, vel tortuosus, nodosus et humilior, pilis simplicibus vel ramosis vestita. *Folia* alterna, longe petiolata, 3-foliolata; foliola ovato-elliptica, 1–2 poll. longa, acuminata, obtusiuscula, subtus pubescentia, supra glabrescentia, lateralia obliqua, brevissime petiolata; petiolus gracilis, semiteres, supra canaliculatus, undique pilosulus 1–2½ poll. longus. *Flores* pauci, conferti, subumbellati, breviter pedicellati, vix 6 lineas longi, pedunculis quam folia sæpius longioribus; calyx pilosus vel setulosus, sepalis oblongo-lanceolatis obtusiusculis; petala lutea, obtusa, sepalis subduplo longiora; stamina basi brevissime coalita; ovarium glabrum, profunde 5-lobum, lobis dorso tricostatis, apice deinde et breviter obtuse productis; ovula solitaria.—Hook., Ic. Pl., xiiii. p. 21, t. 1226. Descriptio parum mutata.

Fernando-Noronha, Rat Island, and St Michael's Mount.—Without special locality —*C. Darwin; Moseley.*

"Allied to *Oxalis insipida*, St. Hil., and in facies near Gardner's *Oxalis* (No. 2080), collected in Piauhy."—D. Oliver, *loc. cit.*

AMPELIDEÆ.

Vitis sicyoides, Baker.

Vitis sicyoides, Baker in Mart. Fl. Bras., xiv. pars 2, p. 202.
Cissus sicyoides, Linn., Sp. Pl., ed. 2, p. 170; Griseb., Fl. Brit. W. Ind., p. 102.

Fernando-Noronha. *Moseley.*

General in Tropical and Subtropical America.

SAPINDACEÆ.

Cardiospermum halicacabum, Linn.

Cardiospermum halicacabum, Linn., Sp. Pl., ed. 1, p. 366; Griseb., Fl. Brit. W. Ind., p. 122.

FERNANDO-NORONHA. *Moseley.*

Common in tropical and subtropical countries all over the globe.

ANACARDIACEÆ.

Anacardium occidentale, Linn.

Anacardium occidentale, Linn., Sp. Pl., ed. 1, p. 383; Griseb., Fl. Brit. W. Ind., p. 176; Desc., Fl. Ant., vii. t. 507.

FERNANDO-NORONHA. *Moseley.*

Mexico and West Indies to Brazil, and naturalised in nearly all other tropical countries.

LEGUMINOSÆ.

PAPILIONACEÆ.

Tephrosia cinerea, Pers.

Tephrosia cinerea, Pers., Ench., ii. p. 328; Jacq., Ic. Pl. Par., t. 575; Griseb., Fl. Brit. W. Ind. p. 182.

FERNANDO-NORONHA. *Moseley.*

Mexico and the West Indies to Uruguay.

Phaseolus peduncularis, H. B. K.

Phaseolus peduncularis, H. B. K., Nov. Gen. et Sp., vi. p. 447; Benth. in Mart. Fl. Bras., xv. pars 1, p. 184.

FERNANDO-NORONHA. *Moseley.*

Panama eastward, and southward to North Brazil.

Desmodium spirale, DC.

Desmodium spirale, DC., Prodr., ii. p. 332; Benth. in Mart. Fl. Bras., xv. pars 1, p. 105; Griseb., Fl. Brit. W. Ind., p. 188.

FERNANDO-NORONHA. *Moseley.*

Common in tropical regions in both hemispheres.

CÆSALPINIEÆ.

Cassia tora, Linn.

Cassia tora, Linn., Sp. Pl., ed. 1, p. 376; Benth. in Trans. Linn. Soc. Lond., xxvii. p. 535; Griseb., Fl. Brit. W. Ind., p. 209, sub *Cassia obtusifolia.*

FERNANDO-NORONHA. *Moseley.*

Generally dispersed in the tropics.

Cassia occidentalis, Linn.

Cassia occidentalis, Linn., Sp. Pl., ed. 1, p. 377; Benth. in Trans. Linn. Soc. Lond., xxvii. p. 532; Griseb., Fl. Brit. W. Ind., p. 209.

Fernando-Noronha. *Moseley.*

All over Tropical America, and also now common in Tropical Asia and Africa, though probably of American origin.

ONAGRARIEÆ.

Jussiæa linifolia, Vahl.

Jussiæa linifolia, Vahl, Eclog. Bot., ii. p. 31; Micheli in Mart. Fl. Bras., xiii. pars 2, p. 162.
Jussiæa acuminata, Swartz; Griseb., Fl. Brit. W. Ind., p. 272.

Fernando-Noronha. *Moseley.*

Nearly everywhere in the tropics.

Cereus insularis, Hemsl., n. sp. (Plate XIV.)

Cereus insularis, Hemsl., n. sp.

Cereus repens vel vagans, valde ramosus, ramis cylindricis 1–2 poll. diametro, 6-angulatis; costæ tenues, compressæ, continuæ; areolæ confertæ, breviter tomentosæ; aculei 12–15, inæquales, radiati, teretes, flavi. *Flores* flavi, circiter 5 poll. longi; calycis tubus præter squamellas parvas paucissimas nudus, glaber, $3\frac{1}{2}$–4 poll. longus, ut videtur rectus, sepalis pauciseriatis augustis acutis, longioribus pollicaribus; petala pauciserrata augusta, acuta, sepala vix excedentia; stamina numerosissima, multiseriata, quam petala breviora, filamentis filiformibus; ovarium inerme, paucisquamosum; stylus stamina superans, stigmate 13-radiato.

St Michael's Mount. *Moseley.*

This species is near *Cereus flagelliformis*, Haworth, *Cereus flagriformis*, Zuccarini, and others of the group *Flagriformes* in habit; but its yellow flowers more nearly approach those of *Cereus cærulescens*, Pfeiffer, in having an almost naked calyx tube. Moseley states that it covers the cliffs with a tangled mass of branches.

CUCURBITACEÆ.

Trianosperma racemosa, Griseb.

Trianosperma racemosa, Griseb., Cat. Pl. Cub., p. 112; Cogniaux in DC. Monogr. Phanerog., iii. p. 768 (varietates 7), sub *Cayaponia*.
Cionandra racemosa, Griseb., Fl. Brit. W. Ind., p. 286.

St Michael's Mount. *Moseley.*

Mexico to Venezuela, and Cuba to Trinidad and Guiana.

Cucumis anguria, Linn.

Cucumis anguria, Linn., Sp. Pl., ed. i. p. 1011; Cogniaux in DC. Monogr. Phanerog., iii. p. 501; Griseb., Fl. Brit. W. Ind., p. 288.

St Michael's Mount. *Moseley.*

Florida and Texas, through Mexico and the West Indies to Peru and Brazil.

Momordica charantia, Linn.

Momordica charantia, Linn., Sp. Pl., ed. i. p. 1009; Cogniaux in DC. Monogr. Phanerog., iii. p. 436; Griseb., Fl. Brit. W. Ind., p. 287.

Rat Island and St Michael's Mount. *Moseley.*

Everywhere in tropical and subtropical regions, but supposed to have been introduced into America.

RUBIACEÆ.

Spermacoce parviflora, Hemsl.

Spermacoce parviflora, Hemsl. in Salv. et Godm. Biolog. Centr. Am., Bot., ii. p. 59.
Borreria parviflora, G. F. W. Mey., Fl. Esseq., p. 83, t. i.; Griseb., Fl. Brit. W. Ind., p. 349.
Spermacoce hirta, Swartz *non alior.*

Fernando-Noronha. *Moseley.*

Common in Tropical America, from Guatemala to Peru and Brazil, and throughout the West Indies.

COMPOSITÆ.

Blainvillea rhomboidea, Cass.

Blainvillea rhomboidea, Cass. in Dict. Sc. Nat., xxix. p. 494; DC., Prodr., v. p. 492; Oliv., Fl. Trop. Afr., iii. p. 375.

Fernando-Noronha. *Moseley.*

Common in Brazil; also in Tropical Africa.

Eclipta alba, Hassk.

Eclipta alba, Hassk., Pl. Jav. Rar., p. 528; Griseb., Fl. Brit. W. Ind., p. 370.
Eclipta erecta, *Eclipta prostrata*, et *Eclipta punctata*, Linn., Mant. alt., p. 286.

Fernando-Noronha. *Moseley.*

A common weed in nearly all tropical and subtropical countries, and extending into temperate regions.

APOCYNACEÆ.

Rauwolfia ternifolia, Kunth.

Rauwolfia ternifolia, Kunth, Synop. Pl. Æquin., ii. p. 298; Griseb., Fl. Brit. W. Ind., p. 408; Bot. Mag., t. 2440.

Fernando-Noronha. *Moseley.*

Trinidad, Venezuela, Guiana, and Brazil.

ASCLEPIADEÆ.

Gonolobus micranthus, Hook. (Plate XV.)

Gonolobus micranthus, Hook. f. MSS. in Herb. Kew.

Gracilis, floribus pro genere minutis, folliculis grosse muricato-tuberculatis.

Frutex volubilis vel scandens, ramulis gracilibus puberulis, cortice flavo. *Folia* longe graciliterque petiolata, membranacea, cordiformia, sinu clauso, lobis sæpius obtegentibus, absque petiolo 1–2 poll. longa, acuta, utrinque sparse beviterque pubescentia, supra in sinu 2–3 glandulosa; petiolus 1–2 poll. longus. *Flores* minuti, pauci in axillas conferti; calyx intus 5-glandulosus, lobis ovatis acutis intus glabris; corolla rotato-campanulata, intus setuloso-pubescens, lobis ovatis acutiusculis apicem versus tantum hirsutis; corona annulata, puberula, intus lineis crassis instructa, 5-lobata, lobis corollæ segmentis alternantibus gynostegio brevioribus; stigma planum. *Folliculi* longe grosseque muricato-tuberculati, simul furfuraceo-hirsuti; semina longe comosa, ovata, compressa, margine muricata.

St Michael's Mount. *Moseley.*

BORAGINEÆ.

Heliotropium indicum, Linn.

Heliotropium indicum, Linn., Sp. Pl., ed. 1, p. 130; Griseb., Fl. Brit. W. Ind., p. 485; Bot. Mag. t. 1837.

Heliophytum indicum, DC., Prodr., ix. p. 556.

Fernando-Noronha. *Darwin; Moseley.*

A common weed in warm countries.

CONVOLVULACEÆ.

Ipomœa pentaphylla, Jacq.

Ipomœa pentaphylla, Jacq., Collect., ii. p. 297, et Ic. Pl. Rar., t. 319; Griseb., Fl. Brit. W. Ind., p. 467.

Batatas pentaphylla, Choisy in DC. Prodr., ix. p. 339.

Fernando-Noronha. *Moseley.*

Generally dispersed in tropical countries.

Ipomœa pes-capræ, Sweet.

Ipomœa pes-capræ, Sweet, Hort. Suburb. Londin. (1818), p. 35; Roth, Nov. Pl. Sp., p. 100; Griseb., Fl. Brit. W. Ind., p. 470.

FERNANDO-NORONHA. *Moseley.*

Very widely dispersed in warm countries, but chiefly on sandy sea-shores.

Ipomœa tuba, Don.

Ipomœa tuba, Don, Gen. Syst., iv. p. 271; Griseb., Fl. Brit. W. Ind., p. 467; Mart., Fl. Bras., vii. p. 216.

FERNANDO-NORONHA. *Moseley.*

West Indies, Guiana, and Brazil.

Cuscuta americana, Linn.

Cuscuta americana, Linn., Sp. Pl., ed 1, p. 124; Griseb., Fl. Brit. W. Ind., p. 476; Mart., Fl. Bras., vii. p. 376, t. 126, fig. 1.

FERNANDO-NORONHA. *Moseley.*

Mexico and the West Indies to Brazil.

SOLANACEÆ.

Solanum paniculatum, Linn.

Solanum paniculatum, Linn., Sp. Pl., ed. 2, p. 267; DC., Prodr., xiii. 1, p. 278.

FERNANDO-NORONHA. *Moseley.*

Common in Brazil.

Physalis hirsuta, Dun. var.?

Physalis hirsuta, Dun. var.? DC., Prodr., xiii. 1, p. 445.

FERNANDO-NORONHA. *Moseley.*

This may be the same as *Physalis pubescens*, Linn., a widely dispersed species in warm countries.

Datura stramonium, Linn.

Datura stramonium, Linn., Sp. Pl., ed. 1, p. 179; Griseb., Fl. Brit. W. Ind., p. 434.

FERNANDO-NORONHA. *Moseley.*

Everywhere, almost, in tropical and temperate regions where there is cultivation.

SCROPHULARINEÆ.

Scoparia dulcis, Linn.

Scoparia dulcis, Linn., Sp. Pl., ed. 1, p. 116; Griseb., Fl. Brit. W. Ind., p. 427; DC., Prodr., x. p. 431.

FERNANDO-NORONHA. *Moseley.*

Common in nearly all tropical and subtropical countries.

BIGNONIACEÆ.

Bignonia, sp. ?

Bignonia, sp. ?

FERNANDO-NORONHA. *Darwin.*

Only a small branch and two or three flowers: insufficient for determination.

VERBENACEÆ.

Lantana lilacina, Desf.

Lantana lilacina, Desf., Cat. Hort. Par., ed. 3, p. 392; DC., Prodr., xi. p. 604; Griseb., Fl. Brit. W. Ind., p. 604, sub *Lantana stricta*.

FERNANDO-NORONHA. *Moseley.*

West Indies to Brazil.

LABIATÆ.

Hyptis suaveolens, Poit.

Hyptis suaveolens, Poit. in Ann. Mus. Par., vii. p. 472, t. 29, fig. 2; DC., Prodr., xii. p. 126; Griseb., Fl. Brit. W. Ind., p. 489.

FERNANDO-NORONHA. *Moseley.*

Common in Tropical America, and naturalised in India.

Hyptis pectinata, Poit.

Hyptis pectinata, Poit. in Ann. Mus. Par., vii. p. 474, t. 30; DC., Prodr., xii. p. 127; Griseb., Fl. Brit. W. Ind., p. 489.

FERNANDO-NORONHA. *Moseley.*

From Mexico and Cuba to Uruguay.

NYCTAGINEÆ.

Bœrhaavia paniculata, Rich.

Bœrhaavia paniculata, Rich.; Choisy in DC. Prodr., xiii. 2, p. 450; Griseb., Fl. Brit. W. Ind., p. 69.

Bœrhaavia diffusa, Swartz *non* Linn.

FERNANDO-NORONHA. *Moseley.*

Florida, Georgia, Mexico, Central America, and West Indies.

Pisonia darwinii, Hemsl. (Plate XLVII.)

Pisonia darwinii, Hemsl., n. sp.

Hermaphrodita ? inermis, foliis parvis ovato-rotundatis cymis terminalibus paucifloris breviter pedunculatis.

Frutex novellis ferrugineo-puberulis aut pulverulentis; ramuli crassiusculi, tortuosi, nodosi, glabrescentes, internodiis brevibus. *Folia* opposita, petiolata, crassiuscula, mollia

(juniora tantum visa) rotundata vel ovata, absque petiolo usque ad 15 lineas longa, margine undulata, præcipue subtus ferrugineo-pubescentia; petiolus 3-4 lineas longus. *Flores* parvi (perianthium circiter sesquilineam longum) in cymas parvas terminales dispositi, subsessiles, intus extusque ferrugineo-pulverulenti; perianthium auguste campanulatum, plicatum vix lobatum; stamina 7 vel 8 exserta; ovarium glabrum, 1-ovulatum, stylo incluso. *Fructus* deest.

Fernando-Noronha. *Darwin.*

This is quite distinct from anything we have seen from either the mainland or the West Indies, and, in fact, is not very closely allied to any species. We were unable to decide whether it is truly hermaphrodite.

AMARANTACEÆ.

Euxolus viridis, Moq.

Euxolus viridis, Moq. in DC. Prodr., xiii. 2, p. 273; Griseb. Fl. Brit. W. Ind., p. 68.

Fernando-Noronha. *Moseley.*

Very widely spread in warm countries.

Philoxerus vermicularis, R. Br.

Philoxerus vermicularis, R. Br., Prodr. Fl. N. Holl., p. 416; Griseb., Fl. Brit. W. Ind., p. 65.
Iresine vermicularis et *Iresine aggregata,* Moq. in DC. Prodr., xiii. 2, p. 340.

Fernando-Noronha. *Darwin; Moseley.*

Common in maritime districts of Tropical and Subtropical America; also in Western Africa.

PHYTOLACCACEÆ.

Rivina humilis, Linn.

Rivina humilis, Linn., Sp. Pl., ed. 1, p. 121; Griseb., Fl. Brit. W. Ind., p. 59, sub *Rivina glabra;* Bot. Mag., tt. 1781 et 2333.

Fernando-Noronha. *Darwin; Moseley.*

Exceedingly common in Tropical and Subtropical America, and naturalised in many parts of the Old World.

EUPHORBIACEÆ.

Euphorbia comosa, Vell.

Euphorbia comosa, Vell., Fl. Fluminensis, t. 15; DC., Prodr., xv. 2, p. 66.

Fernando-Noronha. *Moseley.*

Brazil, though only recorded from the neighbourhood of Rio de Janeiro and San Cristoforo.

Euphorbia hypericifolia, Linn.

Euphorbia hypericifolia, Linn., Hort. Cliff., p. 198; DC., Prodr., xv. 2, p. 23; Hook., Exot. Fl., t. 36; Griseb., Fl. Brit. W. Ind., p. 54.

FERNANDO-NORONHA. *Moseley.*

Very common and widely spread in the warmer parts of America.

Euphorbia pilulifera, Linn.

Euphorbia pilulifera, Linn., Amœn. Acad., iii. p. 114; DC., Prodr., xv. 2, p. 21; Jacq., Ic. Pl. Rar., iii. t. 478; Griseb., Fl. Brit. W. Ind., p. 54.

FERNANDO-NORONHA. *Moseley.*

Generally spread in tropical countries.

Euphorbia thymifolia, Burm.

Euphorbia thymifolia, Burm., Fl. Ind., p. 2; DC., Prodr., xv. 2, p. 47; Griseb., p. 53, sub *Euphorbia maculata*.

FERNANDO-NORONHA. *Moseley.*

Generally spread in tropical countries, and extending into some subtropical regions.

Phyllanthus brasiliensis, Müll.

Phyllanthus brasiliensis, Müll., Arg. in DC. Prodr., xv. 2, p. 383 (varietas *genuina*).
Phyllanthus conami, Swartz; Griseb., Fl. Brit. W. Ind., p. 33.

FERNANDO-NORONHA. *Moseley.*

West Indies, Venezuela, Eastern Peru, Guiana, and Brazil; also recorded by Grisebach from Yucatan.

Jatropha gossypifolia, Linn.

Jatropha gossypifolia, Linn., Sp. Pl., ed. 1, p. 1006; DC., Prodr., xv. 2, p. 1086 (varietates); Griseb., Fl. Brit. W. Ind., p. 36.

FERNANDO-NORONHA. *Moseley.*

Widely diffused in Tropical America, and occurring in West Africa.

Jatropha urens, Linn.

Jatropha urens, Linn., Sp. Pl., ed. 1, p. 1007; DC., Prodr., xv. 2, p. 1100 (varietates); Jacq., Hort. Vindob., i. p. 8, t. 21.

FERNANDO-NORONHA. *Moseley.*

Southern States of North America, through Mexico, to Brazil.

In addition to the foregoing Euphorbiaceæ, Sir Joseph Hooker's manuscript list of the plants collected by Mr Darwin in Fernando-Noronha contains two species of *Acalypha* and one species of *Sapium*, which we have not seen, as, for some reason, they were not sent with the others from Cambridge.

URTICACEÆ.

Ficus noronhæ, Oliver.

Ficus noronhæ, Oliver, n. sp.

Arbor glabra, ramis crassis angulatis. *Folia* petiolata, tenuiter coriacea, obovato-elliptica vel elliptica, 3–6 poll. longa, apice obtusa [obtusissima vel rotundata], basi obtusa vel anguste cordata, integerrima, glaberrima, nervo medio subtus prominente, venis primariis lateralibus utrinque 6–7; petiolus [incrassatus] 3–12 lineas longus; stipulæ caducæ, oblongo-lanceolatæ, longe acuminatæ, acutæ, 1–1½ poll. longæ. *Receptacula* depresso-globosa, 6–9 lineas diametro, glabra, lævia, sessilia, solitaria, bracteis 2–3 basalibus coriaceis late rotundatis instructa [juniora geminata bracteis plurimis omnino involventia]. *Flores* stipitati vel sessiles; perianthii segmenta concava, obtusa; stigma, ut videtur, bifidum, papillosum."—Hook., Ic. Pl., xiii. p. 18, t. 1222. Descriptio parum mutata.

St Michael's Mount. All over the upper part of the rock—*Moseley*.

MONOCOTYLEDONES.

CYPERACEÆ.

Cyperus ligularis, Linn.

Cyperus ligularis, Linn., Amœn. Acad., v. p. 31; Kunth, Enum., ii. p. 79; Griseb., Fl. Brit. W. Ind., p. 566.

Fernando-Noronha. *Moseley*.

Tropical America and Africa.

Cyperus densiflorus, Meyer.

Cyperus densiflorus, Meyer, Fl. Esseq., p. 34; Mart., Fl. Bras., ii. 1, p. 41; Kunth, Enum., Pl. ii. p. 104.

Fernando-Noronha. *Moseley*.

Brazil.

We have not seen the specimen of this species which is mentioned in the original catalogue under the name of *Cyperus schraderianus*, Mart., which Martius cites as a synonym of the above.

GRAMINEÆ.

Panicum colonum, Linn.

Panicum colonum, Linn., Sp. Pl., ed. 2, p. 84; Griseb., Fl. Brit. W. Ind., p. 545.
Oplismenus colonus, H. B. K., Nov. Gen. et Sp., i. p. 109; Kunth, Enum., i. p. 142.

Fernando-Noronha. *Moseley*.

Common in all tropical countries.

Panicum parvifolium, Lam.

Panicum parvifolium, Lam., Encycl., iv. p. 742; Mart., Fl. Bras., i. p. 261; Kunth, Enum., Pl. i. 1, p. 109.

FERNANDO-NORONHA. *Moseley.*

Guiana; Brazil.

Setaria verticillata, Beauv.

Setaria verticillata, Beauv., Agrost., p. 51; Kunth, Enum., Pl. i. 1, p. 152.

FERNANDO-NORONHA. *Moseley.*

In all tropical and most temperate regions where there is cultivation.

Cenchrus echinatus, Linn.

Cenchrus echinatus, Linn., Sp. Pl., ed. 1, p. 1050; Kunth, Enum. i. p. 166; Griseb., Fl. Brit. W. Ind., p. 556.

FERNANDO-NORONHA. *Moseley.*

Very widely spread, but often occurring only as a weed of cultivation.

Dactyloctenium ægyptiacum, Willd.

Dactyloctenium ægyptiacum, Willd., Enum. Pl. Hort. Berol., p. 1029; Kunth, Enum., i. p. 261; Griseb., Fl. Brit. W. Ind, p. 540.

FERNANDO-NORONHA. *Moseley.*

Common in nearly all warm countries.

CRYPTOGAMÆ.

VASCULARES.

Not a single species of this class of plants was collected; and if any species exist in the main island or neighbouring islets, they must be exceedingly rare, for Mr Moseley had them in mind, and specially sought after them.

CELLULARES.

With the exception of the one lichen described below, only aquatic cryptogams were found by Mr Moseley.

LICHENES.

LICHENACCI.

Lecanorei.

Lecanora recubans, Stirton.

Lecanora recubans, Stirton, n. sp.

Thallus (K. fl., C. fl.) albidus vel pallide cinereus, crassiusculus, rimoso-areolatus, *albo* determinatus; apothecia minuta, innata, concoloria, concava, marginata; sporæ 8-næ, simplices, incolores, ellipsoideæ, longit. 0·009–0·012 millim., crassit. 0·006–0·007 millim., non rite evolutæ; paraphyses non bene distinctæ, apicibus citrinis glanduloso-inspersis; hypothecium incolor. Gelatina hymenialis iodo dilute cærulescens, dein pallide fulvescens. —Journ. Linn. Soc. Lond., xiv. p. 375.

Fernando-Noronha.—On rocks—*Moseley.*

This species is allied to *Lecanora bella*, Achar., *fide* Crombie in Journ. Linn. Soc. Lond., xvi. p. 219.

ALGÆ.

Excluding three or four, mostly cosmopolites, and the smaller species from the rock-pools, the algæ of Fernando-Noronha are chiefly related to those of the Mexican Gulf.

MELANOSPERMEÆ.

Fucaceæ.

Sargassum vulgare, K. A. Agardh.

Sargassum vulgare, K. A. Agardh, Sp. Alg., i. p. 3; Dickie in Journ. Linn. Soc. Lond., xiv. p. 363.

Fernando-Noronha. *Moseley.*

Tropical and Subtropical Atlantic; Manilla; Mauritius.

The specimens much smaller than usual.

Dictyotaceæ.

Haliseris plagiogramma, Mont.

Haliseris plagiogramma, Mont., Cuba, p. 63, t. 3, fig. 3; Dickie in Journ. Linn. Soc. Lond., xiv. p. 363.

Fernando-Noronha. *Moseley.*

Cuba; Brazil; Sandwich Islands.

Haliseris delicatula, K. A. Agardh.

Haliseris delicatula, K. A. Agardh, Sp. Alg., i. p. 144; Harv., Nereis Bor.-Am., i. p. 103; Kütz., Sp. Alg., p. 562; Dickie in Journ. Linn. Soc. Lond., xiv. p. 363.

Fernando-Noronha. *Moseley.*

Florida; West Indies; Brazil.

Padina pavonia, Gaill.

Padina pavonia, Gaill., Résum., p. 24; Harv., Nereis Bor.-Am., i. p. 104; Dickie in Journ. Linn. Soc. Lond., xiv. p. 363.

FERNANDO-NORONHA. *Moseley.*

Widely diffused in both hemispheres.

Dictyota ciliata, J. G. Agardh.

Dictyota ciliata, J. G. Agardh; Kütz., Sp. Alg., p. 556; Harv., Nereis Bor.-Am., i. p. 110; Dickie in Journ. Linn. Soc. Lond., xiv. p. 363.

FERNANDO-NORONHA. *Moseley.*

Florida; West Indies; Australia; Ceylon.

Dictyota bartayresiana, Lamour.

Dictyota bartayresiana, Lamour.; Kütz., Sp. Alg., p. 554; Dickie in Journ. Linn. Soc. Lond., xiv. p. 363.

FERNANDO-NORONHA. *Moseley.*

Florida; West Indies; eastern Atlantic Islands; Mauritius.

Asperococcus intricatus, J. G. Agardh.

Asperococcus intricatus, J. G. Agardh, Alg. Liebm., p. 7, et Sp. Alg., i. p. 77; Harv., Nereis Bor.-Am., i. p. 119.

FERNANDO-NORONHA. *Moseley.*

Gulf of Mexico.

RHODOSPERMEÆ.

RHODOMELACEÆ.

Amansia duperreyi, J. G. Agardh.

Amansia duperreyi, J. G. Agardh, Symb., p. 26, et Sp. Alg., ii. p. 1115; Dickie in Journ. Linn. Soc. Lond., xiv. p. 363.

Rytiphlæa duperreyi, K. A. Agardh, Sp. Alg., ii. p. 52; Kütz., Sp. Alg., p. 844.

FERNANDO-NORONHA. *Moseley.*

Martinique.

Acanthophora thierii, Lamour.

Acanthophora thierii, Lamour.; Kütz., Sp. Alg., p. 858; Dickie in Journ. Linn. Soc. Lond., xiv. p. 363.

FERNANDO-NORONHA. *Moseley.*

Biarritz; Florida; West Indies; Brazil; Polynesia; Mauritius, &c.

CORALLINACEÆ.

Corallina ceratoides, Kütz.

Corallina ceratoides, Kütz., ex Dickie in Journ. Linn. Soc. Lond., xiv. p. 363.

FERNANDO-NORONHA. On *Acanthophora thierii*.

Shores of Mexico.

Jania cubensis, Mont.

Jania cubensis, Mont. in Kütz., Sp. Alg., p. 709, et Syll. Gen. et Sp. Crypt., p. 429; Harv., Nereis Bor.-Am., ii. p. 84.

FERNANDO-NORONHA. *Moseley.*

Cuba; Gulf of Mexico; Florida; Cape Verde Islands.

Lithothamnion mamillare, Harv.

Lithothamnion mamillare, Harv., ex Dickie in Journ. Linn. Soc. Lond., xiv. p. 363.

FERNANDO-NORONHA. *Moseley.*

Bahia; Cape Verde; Algoa Bay.

SPHÆROCOCCOIDEÆ.

Gracilaria multipartita, Harv.

Gracilaria multipartita, Harv., Phyc. Brit., t. 15, et Nereis Bor.-Am., ii. p. 107; Dickie in Journ. Linn. Soc. Lond., xiv. p. 364.

FERNANDO-NORONHA. *Moseley.*

Widely diffused.

Mr Moseley's specimens comprehend the ordinary form of the species, as also var. *β angustissima*, and forms intermediate between the two.

Gracilaria armata, J. G. Agardh.

Gracilaria armata, J. G. Agardh, Sp. Alg., ii. p. 591? ex Dickie in Journ. Linn. Soc. Lond., xiv. p. 364.

FERNANDO-NORONHA. *Moseley.*

Mediterranean; Florida.

Only two or three very imperfect specimens, and therefore the species doubtful, but having the structure of the genus.

SQUAMARIEÆ.

Peyssonnelia dubyi, Crouan.

Peyssonnelia dubyi, Crouan; Kütz., Sp. Alg., p. 694; Harv., Nereis Bor.-Am., ii. p. 130; Dickie in Journ. Linn. Soc. Lond., xiv. p. 364.

FERNANDO-NORONHA. *Moseley.*

France; Britain; Florida.

A few very dwarfed specimens were found upon *Lithothamnion mamillare*.

Helminthocladeæ.

Galaxaura cylindrica, Lamour.

Galaxaura cylindrica, Lamour., Exp. Méth., p. 22, ex Kütz., Sp. Alg., p. 530; Dickie in Journ. Linn. Soc. Lond., xiv. p. 364.

Fernando-Noronha. *Moseley.*

Barbadoes; Red Sea; Cape Verde Islands.

Galaxaura oblongata, Lamour.

Galaxaura oblongata, Lamour., Polyp. Flex., p. 262, ex Kütz., Sp. Alg., p. 529; Dickie in Journ. Linn. Soc. Lond., xiv. p. 364.

Fernando-Noronha. *Moseley.*

West Indies; Ceylon; Cape of Good Hope.

Galaxaura marginata, Lamour.

Galaxaura marginata, Lamour.; Kütz., Sp. Alg., p. 530; Dickie in Journ. Linn. Soc. Lond., xiv. p. 364.

Fernando-Noronha. *Moseley.*

West Indies; Madagascar; Mauritius.

Galaxaura rugosa, Lamour.

Galaxaura rugosa, Lamour.; Kütz., Sp. Alg., p. 530; Dickie in Journ. Linn. Soc. Lond., xiv. p. 364.

Fernando-Noronha. *Moseley.*

West Indies; Mauritius; Gambier Islands; Cape Verde Islands; Fiji Islands.

Cryptonemiaceæ.

Chrysymenia enteromorpha, Harv. ?

Chrysymenia enteromorpha, Harv., Nereis Bor.-Am., ii. p. 187 ? ex Dickie in Journ. Linn. Soc. Lond., xiv. p. 364.

Fernando-Noronha. *Moseley.*

Florida.

The single very fragmentary specimen has the structure of the genus, but the species is doubtful.

CHLOROSPERMEÆ.

Siphonaceæ.

Caulerpa clavifera, K. A. Agardh.

Caulerpa clavifera, K. A. Agardh, Sp. Alg., i. p. 437; Harv., Nereis Bor.-Am., iii. p. 19; Dickie in Journ. Linn. Soc. Lond., xiv. p. 364.

Fernando-Noronha. *Moseley.*

Canaries; Red Sea; Indian Ocean; Florida Keys.

Caulerpa mexicana, Sonder.

Caulerpa mexicana, Sonder; Kütz., Sp. Alg., p. 496; Harv., Nereis Bor.-Am., iii. p. 16, t. 37, A.

Fernando-Noronha. *Moseley.*

Gulf of Mexico; Florida Keys; Bermudas; Cape Verde Islands.

Caulerpa webbiana, Mont.

Caulerpa webbiana, Mont., Syll. Gen. et Sp. Crypt., p. 453; Dickie in Journ. Linn. Soc. Lond., xiv. p. 364.

Fernando-Noronha. *Darwin.*

Canary Islands.

Halimeda opuntia, Lamour.

Halimeda opuntia, Lamour.; Kütz., Sp. Alg., p. 504; Harv., Nereis Bor.-Am., iii. p. 23, t. 40, B; Dickie in Journ. Linn. Soc. Lond., xiv. p. 364.

Fernando-Noronha. *Moseley.*

Florida, West Indies, and widely dispersed in warm seas.

Ulvaceæ.

Enteromorpha ——?

Enteromorpha ——? ex Dickie in Journ. Linn. Soc. Lond., xiv. p. 365.

Fernando-Noronha. *Moseley.*

So very imperfect that the genus only can be indicated; it seems nearly allied to *Enteromorpha clathrata*, Grev.

Kallonema obscurum, n. sp.

Kallonema obscurum, n. sp., Dickie in Journ. Linn. Soc. Lond., xiv. p. 365.

Frons capillaris, undulata, pallide virescens, vage et irregulariter ramosa, e cellulis subquadratis laxe connexis formata.

Fernando-Noronha. *Moseley.*

The specimens are very fragmentary, mixed with some of the following in rock-pools.

Ulva lobata, Kütz.

Ulva lobata, Kütz., Sp. Alg.; Dickie in Journ. Linn. Soc. Lond., xiv. p. 365.

Fernando-Noronha. *Moseley.*

Chili; Cape of Good Hope; Mauritius; Ceylon; Macao; Singapore.

Confervaceæ.

Cladophora subvaricosa, n. sp.

Cladophora subvaricosa, n. sp., Dickie in Journ. Linn. Soc. Lond., xiv. p. 365.

Filamentis passim varicosis, sparsissime ramosis, articulis diametro 3–8-plo longioribus.

Fernando-Noronha. *Moseley.*

In rock-pools, with *Kallonema obscurum.*

Cladophora minuta, n. sp.

Cladophora minuta, n. sp., Dickie in Journ. Linn. Soc. Lond., xiv. p. 365.

Ramulis brevibus, alterne distributis, articulis omnibus diametro 10-plo longioribus.

Platform Island.—In rock-pools, with the next—*Moseley.*

A very small species 1 to 2 lines long; diameter = 0·001 inch.

Oscillatoriaceæ.

Lyngbya noronhæ, n. sp.

Lyngbya noronhæ, n. sp., Dickie in Journ. Linn. Soc. Lond., xiv. p. 365.

Vaginis valde mucosis, subhirtis, confluentibus, trichomatibus curvulis luteolis, articulis diametro 2–3-plo brevioribus.

Platform Island.—In rock-pools—*Moseley.*

Forming yellowish shrub-like masses, half an inch to an inch high; entire diameter of filaments = 0·0006 inch.

It seems nearly allied to *Lyngbya fulva*, Harv.

Palmellaceæ.

Hormospora pellucida, n. sp.

Hormospora pellucida, n. sp., Dickie in Journ. Linn. Soc. Lond., xiv. p. 365.

Tubulis simplicibus, mucosis, pellucidis, æqualibus; cellulis ellipticis, diametro 2-plo longioribus, in seriem moniliformem transverse dispositis.

Fernando-Noronha. *Moseley.*

A very delicate species; entire diameter of the filaments = 0·006 inch.

In rock-pools, mixed with *Cladophora*, &c., above described.

ASCENSION.

INTRODUCTORY NOTES.

Ascension is in the middle of the Atlantic Ocean, in lat. 7° 57′ S., and long. 14° 28′ W., and has an area of about thirty-four square miles, being about seven and a half miles long and six miles broad. It is wholly volcanic, and broken into hills and ravines, with a central peak, the Green Mountain, rising to a height of 2870 feet, and surrounded by a plateau from 1200 to 2000 feet high. There are no ponds or superficial springs, and therefore no running water, except during the rains; consequently, the island is exceedingly barren, except where artificial means have been employed to render the soil more productive.

The earliest record we have seen of the vegetation of Ascension is an enumeration[1] of the plants observed there by Mr James Cunninghame in 1698. The flowering plants mentioned therein, with their modern names, are:—

Chamæsyce frutescens elatior, floribus comosis	= Euphorbia origanoides.
Chamæsyce frutescens humilior, floribus comosis	= Euphorbia origanoides.
Convolvulus maritimus majore folio chinensi, Pluk., t. 24	= Ipomœa pes-capræ.
Ketmia fœtida flore luteo fundo purpureo	= Hibiscus trionum?
Festuca junceis foliis, spica minus sparsa, aristis trifidis	= Aristida adscensionis.

Mr James Britten, of the British Museum, has searched the Sloane Herbarium for these plants, but only succeeded in finding the *Aristida* (Herb. Sl., vol. cclvi. p. 61); and it is probable they do not exist, for the title of the record in the Philosophical Transactions indicates "Shells, &c., collected," and "Plants observed." Assuming that there was no mistake, Cunninghame observed one plant, *Ipomœa pes-capræ*, in the island, which, so far as we are aware, has never been collected or seen there since. It is possible that this widely-spread littoral plant may have obtained a transient footing from seeds cast ashore by the waves, and afterwards suffered destruction by some means. From the perfectly reliable evidence of the eminent traveller Burchell, we know that such a thing happens on the coast of St Helena.

It was not till about the middle of the eighteenth century that more definite information of the vegetation of Ascension was published. In or about the year 1752, Osbeck,

[1] A Catalogue of Shells, &c., collected at the Island of Ascension, by Mr James Cunninghame, Surgeon, with what Plants he observed there; communicated to Mr James Petiver, F.R.S. *Philosophical Transactions of the Royal Society of London* (1699), xxi. p. 295, and abridged edition, iv. p. 419.

a chaplain in the Swedish navy, brought home specimens of four flowering plants, which Linnæus described the following year in the first edition of his Species Plantarum (i. p. 82, &c.); and under *Aristida adscensionis* he has the following observation:—"*Habitat in Insula adscensionis, una ex quatuor istius pauperrimæ Floræ plantis, quarum* (1.) *Sherardia fruticosa*; (2.) *Euphorbia origanoides*; (3.) *Portulaca.*" A comparison with the following enumeration reveals the fact that Osbeck nearly, or perhaps quite, exhausted the indigenous phanerogamic flora of the island! Indeed, we have no positive proof that more than two of the flowering plants are really indigenous. They are *Hedyotis adscensionis* (*Sherardia fruticosa*), and *Euphorbia origanoides;* both are endemic, and perhaps the remnant of a flora that is extinct, save these two species, so far as the flowering plants are concerned; yet it should be remembered that they belong to very widely diffused genera. Among vascular cryptogams there are two endemic ferns, namely, *Nephrodium ascensionis* and *Gymnogramme ascensionis*, the former being most nearly allied to the endemic St Helena species, and the latter not very different from the widely diffused *Gymnogramme leptophylla*, and even nearer the American *Gymnogramme chærophylla*. In 1867, Mr Baker[1] enumerated seven ferns as the total number then known to inhabit Ascension. In the following enumeration are eleven species; the additional ones being *Blechnum australe*, *Asplenium dentatum*, *Nephrodium molle*, and *Ophioglossum vulgatum*. The first was sent to Kew in 1875 by Mr Alex. Blake, without, as far as we have been able to ascertain, direct evidence of its being wild in the island; the second is given on the authority of Bory;[2] the third is almost ubiquitous in warm countries, and may have been carried with some of the numerous plants introduced from time to time for cultivation, while the fourth may be reckoned with the undoubtedly indigenous plants. On the whole, as Mr Baker observes, the ferns of Ascension exhibit a want of any decided characteristic. Altogether, however, the indigenous vegetation is so exceedingly meagre that it offers nothing for consideration from a phyto-geographical standpoint, except a possible relation to the flora of St Helena, briefly discussed below. Darwin[3] says: "Near the coast nothing grows; further inland an occasional green castor-oil plant, and a few grasshoppers, true friends of the desert, may be met with. Some grass is scattered over the surface of the central elevated region, and the whole much resembles the worse parts of the Welsh mountains. But, scanty as the pasture appears, about six hundred sheep, many goats, a few cows and horses, all thrive well on it."

Wallace has merely a passing allusion to it in his Island Life; and Sir Joseph Hooker, in his interesting essay on insular floras,[4] sums up the vegetation of Ascension in the following short paragraph. "The islet of Ascension claims a passing notice; it is much

[1] *Trans. Linn. Soc. Lond.*, xxvi. p. 347.

[2] In Duperr. Voy. "Coquille," Bot. Crypt., p. 270.

[3] *Journal of Researches*, p. 492.

[4] Lecture on Insular Floras, delivered before the British Association for the Advancement of Science at Nottingham in 1866.

smaller than St Helena, and 600 miles north-west of it. St Helena has been called a barren rock, but it is a paradise as compared with Ascension, which consists of a scorched mass of volcanic matter in part resembling bottle-glass, and in part coke and cinders. A small green peak, 2800 feet above the sea, monopolises nearly all the vegetation, which consists of Purslane, a grass, and a Euphorbia in the lower parts of the island, whilst the green peak is clothed with a carpet of ferns, and here and there a shrub, allied to, but different from any St Helena one.[1] There are nine ferns, of which no less than six differ from those of St Helena, and three[2] of them are entirely confined to the islet."

A number of exotic plants have become naturalised in Ascension, and some of them are more prominent than the native plants. A. Richard[3] enumerates about twenty-five, but many of them were probably found only in cultivated ground. Excluding the probably introduced species contained in the following enumeration, a few others are more or less fully established, among them *Senebiera didyma*, *Oxalis corniculata*, *Urena lobata*, *Ageratum conyzoides*, *Solanum nigrum*, *Physalis*, sp., and *Plantago lanceolata*. Richard states that the Physalis covered all the higher parts of the island, and the fruit was much sought after by the inhabitants.

Previously to 1815 Ascension was uninhabited, but from that date there has always been a small population, and more or less cultivation. It was not, however, till 1857 that serious steps were taken to test the cultural capabilities of the island. A skilled gardener superintended the operations, and his success, in spite of droughts, was greater than had been anticipated. Planting was extensively carried out, and, as we learn from reports by Captain Barnard in 1862 and 1864, considerable numbers of a variety of trees and shrubs were in a flourishing condition, and many of the ravines were clothed with blackberry, furze, and other shrubs. In certain parts the soil was of sufficient depth and fertility to yield good crops; but we are not aware that any discoveries were made that would prove that there was ever a more varied and luxuriant indigenous vegetation. In consequence partly of the diversion of the ocean traffic through the Suez Canal, the importance of the island has decreased, and in consequence there is now little cultivation.

On the Community of Origin of the Plants of Ascension and St Helena.

As Wallace says in his Island Life, it is much more philosophical to assume a common origin of the organisms of remote countries than to try to prove a former direct connection between them. There is little, indeed, in the following enumeration to suggest either; but the slight evidence offered below of three plants, supposed to be endemic in St

[1] It should be mentioned that *Hedyotis adscensionis* is more nearly related to African and Asiatic species than it is to the St Helena *Hedyotis arborea*.

[2] That is, if we regard *Pteris flabellata* β *ascensionis* as a distinct species.

[3] Sertum Astrolabianum, pp. 54–56, 1834.

Helena, having also been found in Ascension deserves examination and discussion in this place.

Commidendron rugosum, DC., one of the St Helena small arboreous *Compositæ*, is recorded from Ascension by a no less competent and trustworthy authority than Burchell, who spent five years in St Helena, and was perfectly familiar with every plant. This record was first published, in an abbreviated form, in Hooker's Icones Plantarum, xi. p. 45, and subsequently copied by Melliss in his St Helena. It was first copied from a note, in Burchell's handwriting, on the back of a drawing of *Commidendron rugosum* in the collection of Burchell's drawings of plants, scenery, &c., of St Helena, in the Herbarium library at Kew. The whole note runs thus: "This plant was found growing wild in the Green Mountain at Ascension, but very scarce, and furnishes the principal food for the wild goats. 26. 1. 17." This is written beneath the original inscription: "Scrubwood or gum-shrub, from between Longwood and Gregory's. 18. 5. 1810." In Burchell's manuscript there is evidence that he was at Fulham in 1817, and within a fortnight of the date given, so that it must have been written from memory or copied from some other document. When he was at Ascension, if ever, we have not been able to ascertain; the only mention of the island in his voluminous manuscript notes at Kew that we have seen is the one in question. But Burchell was so exceedingly exact in all his entries, and so thoroughly reliable in everything that can be verified, that we cannot reject his testimony, simply because it has not been corroborated.

The second plant is *Wahlenbergia linifolia*, ADC., which De Candolle himself[1] records from Ascension thus: "In Sancta Helena (L. Banks! Lindl.! Kunth!) et in ins. Ascensionis (Herb. Mérat!)."

The third is *Nephrodium cognatum*, Hook., recorded by Kuhn (Filices Africanæ, p. 128) from Ascension, in Hb. Miquel. Of course it should be kept in view that all three of these records may be wrong; still, the probabilities of a common origin of the vegetation of the two islands are sufficiently strong to justify the publication of the slenderest evidence bearing thereon. The recent discovery in South Trinidad, by Dr Ralph Copeland, of *Asplenium compressum*, a distinct species of fern previously only known from St Helena, may be adduced as another possible link in the chain of evidence of these islands having derived their vegetation from the same source. It has already been mentioned that the Ascension and St Helena species of *Hedyotis* are as dissimilar as any two species of this large genus, and it may be added of the Ascension endemic *Euphorbia origanoides* that its nearest ally is *Euphorbia trinervia* from the Guinea coast, while the genus *Euphorbia* is not represented in the flora of St Helena by any certainly indigenous species. On the other hand, of the fourteen vascular cryptogams found in Ascension, seven also occur in St Helena, and one is more nearly related to endemic St Helena species than to any others.

[1] Prodromus Syst. Nat. Reg. Veg., vii. p. 438.

ENUMERATION OF THE PLANTS.

PHANEROGAMÆ.—DICOTYLEDONES.

CARYOPHYLLACEÆ.

Polycarpon tetraphyllum, Linn., f.

Polycarpon tetraphyllum, Linn., f.; DC., Prodr., iii. p. 376; Oliver, Fl. Trop. Afr., i. p. 144.

ASCENSION.—Indigenous? *Hooker.*

This almost ubiquitous plant in maritime districts was not one of those collected by Osbeck, but it has perhaps as good a claim to be considered indigenous as *Aristida ascensionis* or *Portulaca oleracea.*

PORTULACEÆ.

Portulaca oleracea, Linn.

Portulaca oleracea, Linn., Sp. Pl., ed. i., p. 82, sub *Aristida*, et p. 445, et Amœn. Acad., vii. p. 505; DC., Prodr., iii. p. 353; Oliver, Fl. Trop. Afr., i. p. 148.

ASCENSION.—Indigenous? *Osbeck; Sparrman; Hooker, &c.*

This plant is common on nearly all sandy sea-shores in tropical and subtropical countries, and it seems very probable that its seeds or even branches are conveyed by the waves from shore to shore, for it is found in the most remote and unfrequented places. It is apparently one of the first flowering plants to invade the coral islets, and it will grow close to the water's edge. There is a specimen in Kew Herbarium from Mangaia, South Pacific, collected by the Rev. Mr Gill, who notes on his label: "Grows on dead coral close to water's edge." It grows perhaps equally well inland; and, as it is a cultivated plant, its present wide area of distribution is doubtless partly due to that fact. Unless it belonged to the ancient flora of Ascension and St Helena, which is not probable, its presence in these islands is more likely to be due to the agency of man. Nevertheless, it is of interest to reproduce the earlier records of its existence. As already mentioned, it was one of the four flowering plants collected by Osbeck in Ascension about 1750; and Sparrman observed it in 1776, as we learn from his Iter in Chinam (Amœnitates Academicæ, vii. p. 505). Thus: "Maii 11. Anchora jacta est ad insulam St Helenæ, ubi Portulacæ oleraceæ ingens copia sponte crescebat. Maii 25. Ad insulam Adscensionis pervenimus, ubi in littore numero 79 Testudines Mydas cepimus et Portulacam oleraceam collegimus."

RUBIACEÆ.

Hedyotis adscensionis, DC. (Plate XVI.)

Hedyotis adscensionis, DC., Prodr., iv. p. 419.

Sherardia fruticosa, Linn., Sp. Pl., ed. i. p. 103, et ed. 2, p. 149; Forst. in Comment. Gœtt., ix. (1787) reprint, p. 40.

Ascension.—Endemic. *Osbeck; Lesson; Hooker; Seemann; Moseley.*

Osbeck collected the plant which Linnæus described under the name of *Sherardia fruticosa*, and there is no doubt that De Candolle's *Hedyotis adscensionis* is the same species, though there are great discrepancies in the description. Linnæus had a stunted specimen, like that represented in our figure B, in which the flowers are solitary and almost sessile. De Candolle had a specimen in which the peduncles were one-flowered and shorter than the flowers. In more robust specimens, collected by Seemann, the peduncles are often two-flowered, and the peduncle and pedicel together are twice or nearly three times as long as the flowers. The plant is not only very variable in the degree of scabridity, in the size of the leaves, length of the peduncle, and in the sizes of the flowers, but the latter are also dimorphic, differing in the relative lengths of the calyx lobes and the corolla tube, and also apparently in the position of the stamens. Whether these dimorphic flowers are functionally unisexual the accessible material is insufficient to determine, for the specimens are mostly quite past the flowering stage, and the others bear very few flowers, all of which are expanded and old. Both the long and short flowers have, however, exserted styles of about equal length.

EUPHORBIACEÆ.

Euphorbia origanoides, Linn. (Plate XVII.)

Euphorbia origanoides, Linn., Amœn. Acad., iii. p. 114, et Sp. Pl., ed. 1, p. 453; Forst. in Comment. Gœtt., ix. (1787), reprint, p. 46; Boissier in DC. Prodr., xv. pars 2, p. 15.

Ascension.—Endemic. *Osbeck; Hooker; Seemann; Curror; Moseley;* and in the British Museum collected by *Buchanan.*

MONOCOTYLEDONES.

CYPERACEÆ.

Cyperus umbellatus, Benth.

Cyperus umbellatus, Benth., Fl. Hongk., p. 386, et Fl. Austr., vii. p. 289.

Cyperus capito, Steud., Glumif. Cyp., p. 28.

Mariscus umbellatus, Vahl, Enum., ii. p. 376; Kunth, Enum. Pl., ii. p. 118.

Mariscus appendiculatus, Brongn. in Duperr. Voy. "Coquille," Bot. Phanerog., p. 178, t. 34 A.; Kunth, Enum. Pl., ii. p. 81.

Mariscus polycephalus, A. Rich., Sertum Astrolab., Bot., p. lii.?

Ascension.—Indigenous? *Lesson; Durville; Hooker.*

Widely dispersed in Tropical Asia and Africa, and also occurring in Northeast Australia.

There is little doubt that Richard's *Mariscus polycephalus* is correctly referred to this species, inasmuch as he cites *Mariscus polystachyus*, Brongn., Voy. "Coq.," t. 00, ined., from the same country, which is probably no other than *Mariscus appendiculatus*, Brongn.

Cyperus haspan, Linn.

Cyperus haspan, Linn., Sp. Pl., ed. 1, p. 45; A. Rich., Sertum Astrolab., pp. 50 et 54.

ASCENSION.—Indigenous? *Lesson.*

This species is very common and widely diffused in warm countries, but we have seen no specimen from Ascension.

JUNCACEÆ.

Juncus, sp., A. Rich.

Juncus, sp., A. Rich., Sertum Astrolab., p. 54.

ASCENSION.—Introduced? *Lesson.*

Kyllinga, sp.

Kyllinga, sp. (*Kyllinga monocephala*, Rottb. ?)

ASCENSION.—Introduced? *Moseley.*

Common in Tropical Asia, Africa, and Australia; also occurring in St Helena, where, however, as here, it is probably a colonist. The specimen is stunted and in a young state.

GRAMINEÆ.

Aristida adscensionis, Linn.

Aristida adscensionis, Linn., Sp. Pl., ed. 1, p. 82; Forst. in Comment. Gœtt., ix. (1787), reprint, p. 39; Kunth, Enum., i. p. 190; Brongn. in Duperr. Voy. "Coquille," Bot. Phaner., p. 13.
Chætaria adscensionis, Beauv., Agrost., p. 30.

ASCENSION.—Indigenous? *Osbeck; Hooker; Moseley;* and *Buchanan* in the British Museum.

Generally diffused in the Canaries, Tropical and North Africa, Arabia, Madagascar, Rodriguez, Seychelles, &c.

The specimens that we have seen from Ascension are from three to ten inches in height, very strict in habit, with a close inflorescence, and altogether very different in aspect from most of the specimens so named. On the other hand, quite similar specimens come from Syria and Arabia.

Sporobolus durus, Brongn.

Sporobolus durus, Brongn. in Duperr. Voy. "Coquille," Bot. Phaner., p. 18, t. 4; Kunth, Enum. Pl., i. 1, p. 216.

ASCENSION.—Indigenous?

We have seen no specimen of any species of the genus *Sporobolus* from the island; but this must be very near if not the same, as the widely spread *Sporobolus virginicus*, a species likely to occur in such a situation.

Polypogon adscensionis, Trinius.

Polypogon adscensionis, Trinius, Agrostidea, ii. p. 11; Stendel, Gram., p. 183.

Ascension.—Indigenous?

Collected by Ecklon, and probably an introduced form.

Polypogon strictus, Nees.

Polypogon strictus, Nees in Linnæa, vii. p. 297; Kunth, Enum., i. p. 234.
Polypogon tenue, Brongn. in Duperr. Voy. "Coquille," Bot. Phaner., p. 22.

Ascension.—Indigenous?

Cape of Good Hope.

CRYPTOGAMÆ.—VASCULARES.

LYCOPODIACEÆ.

Psilotum triquetrum, Swartz.

Psilotum triquetrum, Swartz in Schrad. Journ. 1800, ii. p. 109, et Synop. Fil., p. 187; Spring., Monogr. Lycop., partie 2, p. 269; Kuhn, Fil. Afr., p. 187; Hook., Fil. Exot., t. 63.
Bernhardia dichotoma, Willd.; A. Rich., Voy. "Astrolabe," Bot., p. lii.

Ascension.—Indigenous. On the Green Mountain—*Hooker;* without locality—*Blake*, 1875; *Moseley; Lesson.*

Almost universally spread in warm countries, though it is not found in St Helena nor any of the other islands treated of in this work, except the Bermudas.

Lycopodium cernuum, Linn.

Lycopodium cernuum, Linn., Sp. Pl., ed. 1, p. 1103; Bory in Duperr. Voy. "Coquille," Bot. Crypt., p. 246; Swartz, Synop. Fil., p. 178; Spring., Monogr. Lycopod., partie 1, p. 79, partie 2, p. 37; Kuhn, Fil. Afr., p. 183.
Lycopodium boryanum, A. Rich., Sertum Astrolab. Bot., p. lii.

Ascension.—Indigenous. Sometimes densely matted with ferns, creeping and ascending the weather side of the Green Mountain, near the summit—*Hooker;* without locality—*Moseley. Lesson* also collected it.

Common and generally diffused in the tropics, and extending southward to St Paul's Island and New Zealand.

Lycopodium saururus, Lam.

Lycopodium saururus, Lam., Encycl. Bot., iii. p. 653; Swartz, Synop. Fil., p. 176; Baker MSS. in Herb. Kew.
Lycopodium insulare, Carmich. in Trans. Linn. Soc. Lond., xii. p. 509.

Ascension.—Indigenous. *Moseley.*

Widely spread in Africa and America, and common to a larger number of the Atlantic and Southern Islands treated of in this work than any other plant, being found in Ascension, St Helena, Tristan da Cunha group, Marion, St Paul, and Amsterdam Islands.

Fuller synonymy will be found in the following enumeration of the plants of St Helena.

FILICES.

POLYPODIEÆ.

Pteris incisa, Thunb.

Pteris incisa, Thunb., Prodr. Fl. Cap., p. 733; Swartz, Synop. Fil., p. 99; Hook., Sp. Fil., ii. p. 230; Hook. and Bak., Synop. Fil., p. 172; Kuhn, Fil. Afr., p. 82.
Pteris lessonii, Bory in Duperr. Voy. "Coquille," Bot. Crypt., p. 276.
Pteris vespertilionis, Labill., Fl. Nov. Holl., ii. p. 96, t. 245.
Litobrochia incisa, Presl, Tent. Pteridogr., p. 149.

Ascension.—Indigenous. Covering many acres on the weather side of the Green Mountain at 1200 to 1800 feet—*Hooker;* without any remarks—*Curror; Seemann; Moseley.*

Very widely diffused in the tropics, and extending into the south temperate regions, including Tristan da Cunha and New Zealand. Kuhn records it from St Helena, but we have seen no specimens.

Pteris flabellata, Thunb., var. *ascensionis.*

Pteris flabellata, Thunb., Prodr. Fl. Cap., p. 733; Hook., Sp. Fil., ii. p. 185; Hook. and Bak., Synop., p. 161, var. *ascensionis.*
Pteris ascensionis, Swartz, Synop. Fil., pp. 100 et 294; Bory in Duperr. Voy. "Coquille," Bot. Crypt., p. 276.
Lonchitis? adscensionis, Forst. in Comment. Soc. Gœtt., ix. p. 72 (reprint, p. 62).
Pteris arguta, Ait., var. *β minor*, Mett. ex Kuhn, Fil. Afr., p. 77.

Ascension.—Clefts of rocks and shaded places on the Green Mountain at 1200 to 1800 feet—*Hooker;* without locality—*Curror; Moseley.*

The variety is apparently endemic in Ascension, while the species is common in St Helena, and has a wide range in Africa, extending to Bourbon and Rodriguez.

Blechnum australe, Linn.

Blechnum australe, Linn., Mantissa, i. p. 130; Swartz, Synop. Fil., p. 114; Hook., Sp. Fil., p. 56; Hook. and Bak., Synop. Fil., p. 186.

Ascension.—Indigenous?

There is a specimen in Kew Herbarium from Ascension, presented by Mr Alex. Blake in 1875, without any indication of locality, beyond Ascension, or other information. It

may have been taken from a garden, though its general distribution is not incompatible with its being wild. It is widely spread in South Africa, and also occurs in Madagascar, Bourbon, St Paul Island, and the Tristan da Cunha group. The American *Blechnum hastatum* can hardly be regarded as specifically distinct.

Asplenium dentatum, Linn.

Asplenium dentatum, Linn., Sp. Pl., ed. 1, p. 1080; Hook. and Bak., Synop. Fil., p. 196; Bory in Duperr. Voy. "Coquille," Bot. Crypt., p. 270.

Ascension.—Indigenous. *Durville.*

Bermudas; West Indies; Florida; Mexico; Guatemala.

We have seen no specimen of this fern from the island, and it is not taken up by Kuhn in his Filices Africanæ; but we include it entirely on the authority of Bory. It is such a very distinct species that there could hardly arise any error in its determination, though it is not improbable that Bory was mistaken respecting the country.

Asplenium lunulatum, Swartz.

Asplenium lunulatum, Swartz, Synop. Fil., p. 80; Hook. and Bak., Synop. Fil., p. 202.
Asplenium erectum, Bory in Willd. Sp. Pl., v. p. 328; Hook., Sp. Fil., iii. p. 126, t. 178.
Asplenium reclinatum, Houlst. and Moore in Gard. Mag. Bot., ii. p. 260.
Asplenium alatum, A. Rich. (non Willd.), Sertum Astrolab., p. 52?

Ascension.—Indigenous. Most abundant under the scrub and ferns on the weather side of the Green Mountain, also in crevices of rocks from an elevation of 1000 feet up to the summit—*Hooker;* without locality—*Lyall*, *Seemann*, and *Moseley.*

Generally spread in the tropics, except Australia, and extending as far southward as Tristan da Cunha. The form found in Ascension and Tristan da Cunha is small, reclinate, and usually proliferous. Kuhn (Fil. Afr., pp. 102 and 105) retains *Asplenium erectum* as distinct from *Asplenium lunulatum*, and refers the St Helena form to the latter species.

Nephrodium (Lastrea) ascensionis, Hook.

Nephrodium (*Lastrea*) *ascensionis*, Hook., Sp. Fil., iv. p. 124, t. 257; Hook. and Bak., Synop. Fil., p. 279; Kuhn, Fil. Afr., p. 126.

Ascension.—Endemic. On the Green Mountain, 1400 to 1800 feet, not very common—*Hooker; Seeman; Lyall.*

This fern, which is most nearly allied to the endemic St Helena *Nephrodium napoleonis* and *Nephrodium cognatum*, was not collected by Mr Moseley.

Nephrodium (Lastrea) molle, Desv.

Nephrodium (*Lastrea*) *molle*, Desv. in Mém. Soc. Linn. Par., vi. p. 258; Hook., Sp. Fil., iv. p. 67, *pro parte;* Hook. and Bak., Synop. Fil., p. 293; Kuhn, Fil. Afr., p. 136.

Ascension.—Indigenous? Without locality—*Moseley.*

Generally diffused in warm countries, and lately collected in St Helena, though it is in none of the earlier collections.

Polypodium trichomanoides, Swartz.

Polypodium trichomanoides, Swartz, Synop. Fil., p. 33; Schk., Krypt. Gewächse, i. p. 11, ii. t. 10; Hook., Sp. Fil., iv. p. 178; Hook. and Bak., Synop. Fil., p. 326.
β jungermannioides, Hook., Sp. Fil., l. c.
Polypodium planiusculum, Mett. ex Kuhn, Fil. Afr., p. 151.

Ascension.—The variety is endemic. Amongst moss on the summit of the Green Mountain, 2800 feet—*Hooker*.

We have only seen the specimens collected by Sir Joseph Hooker, but Kuhn records Hannemann as having collected the plant. Typical *Polypodium trichomanoides* has a wide range in Tropical Asia and America and in Polynesia. The Ascension plant wants the conspicuous hairs of the type.

Gymnogramme ascensionis, Hook.

Gymnogramme ascensionis, Hook., Sp. Fil., v. p. 137; Hook. and Bak., Synop. Fil., p. 383; Hook., 2d Cent. Ferns, t. 67.
Grammitis ascensionis, Hook., Ic. Pl., t. 967.

Ascension.—Endemic. Wet rocks and banks on the weather side of the Green Mountain, 1200 to 1800 feet—*Hooker;* without locality—*Moseley*.

MARATTIACEÆ.

Marattia purpurascens, De Vriese.

Marattia purpurascens, De Vriese, Monogr. Marat., p. 7, t. 3, fig. 19, t. 4, fig. 19; Kuhn, Fil. Afr., 175; Hook., Fil. Exot., t. 65; Hook and Bak., Synop. Fil., p. 441, under *Marattia fraxinea*.
Marattia ascensionis, J. Sm., Cat. Cult. Ferns, p. 79.
Marattia cristata, J. Sm., Cat. of Kew Ferns, p. 8.

Ascension.—Endemic. Very rare on the weather side of the Green Mountain, near the summit—*Hooker;* without locality—*Seemann; Moseley*.

Perhaps only a stunted state of *Marattia fraxinea*, Sm., which is common in Tropical and South Africa, in Tropical Asia and Polynesia, southward to New Zealand.

OPHIOGLOSSACEÆ.

Ophioglossum vulgatum, Linn.

Ophioglossum vulgatum, Linn., Sp. Pl., ed. 1, p. 1062; Hook. and Bak., Synop. Fil., p. 445.

Ascension.—Indigenous. Without locality—*Dr Murphy*.

This plant covers nearly the whole area of fern distribution. The variety found in Ascension has narrow fronds, and is quite unlike that from St Helena and Tristan da Cunha.

CRYPTOGAMÆ.—CELLULARES.

MUSCI.[1]

Dicranella (Campylopodium) ascensionica, Mitt.

Dicranella (Campylopodium) ascensionica, Mitt. in Melliss's St Helena, p. 357.

Ascension.—Endemic. *Seemann; Moseley.*

This species, which seems to replace the *Dicranella proscripta* of St Helena, is a little less robust and quite distinct in its leaves.

Campylopus introflexus, Mitt.

Dicranum introflexus, Hedw., Sp. Musc., p. 147, t. 29; C. Müll., Synop. Musc. Frond., i. p. 405.

Ascension. *Moseley.*

A widely dispersed moss.

Campylopus helenicus, Mitt.

Dicranum helenicus, C. Müll., Synop. Musc. Frond., ii. 599.

Ascension. *Moseley.*

Barren specimen with *Mastigophora leioclada*; determination uncertain, but the leaves correspond very nearly to the St Helena specimens.

Calymperes (Hyophilina) pulvinatum, Mitt.

Calymperes (Hyophilina) pulvinatum, Mitten, n. sp.

Cæspitosum, caulibus simplicibus foliis ambitu elongati lanceolatis fere ad medium erectis, et e cellulis hyalinis areolatis, inde patentibus apicibus acutiusculis vel nervo concolori dorso scabro in receptaculo gemmifero producto terminatis, margine crenulatis, limbo pallidiore infra apicem evanescente, cellulis minutis obscuris dorso minute papillosis areolatis.

Ascension.—Growing in a tufted manner on decayed wood; barren—*Moseley.*

The stems of this moss vary in the specimens from 1 cm. to 3 cm. in length, but as the foliage is not densely inserted they appear rather slender from the foliage shrinking very much when dry. In the size of the moss and in its leaves it comes near to *Calymperes moluccense*, but the erect lower part of the leaf is longer, although the vanishing limb is similar. From the African *Calymperes afzelii* it differs greatly in the outline of the leaf as well as in the papillation of its cells and scabrous nerve.

[1] By W. Mitten, A.L.S., with a few additional names from other sources.

Rhacopilum gracile, Mitt.

Rhacopilum gracile, Mitt, n. sp.

Caulibus ramulosis laxe cæspitosis gracilibus, foliis ut plurimis assurgentibus patentibus ovali-lanceolatis nervo viridi in aristam viridem lævem producto margine apicem versus minutissime crenulatis vel integerrimis, cellulis parvis ovali-rotundis distinctis areolatis, foliis stipulæformiibus minoribus lanceolato-subulatis.

Caulis inferne radiculosus. Folia viridia humida vix disticha sed patentia concava, sicca appressa.

ASCENSION. *Moseley.*

Differs from *Rhacopilum africanum*, Mitt., and from *Rhacopilum mucronatum*, Beauv., in the leaves not being distichously explanate, in the areolation composed of more distinct cells as well as in the more slender state of the entire moss.

A. Richard (Sertum Astrolabianum, pp. 51–52) enumerates the following mosses from Ascension :—*Dicranum filiforme*, P. Beauv. (*Dicranum capillaceum*, Bridel), *Dicranum fragile*, Hook., *Hypnum?*, *Bartramia?*, *Barbula flexuosa*, Bridel, and *Barbula atlantica?*, Bridel ; and brief diagnoses of the following proposed new species of mosses from Ascension are published by Karl Müller in Engler's Botanische Jahrbücher (1884), v. pp. 83 and 84 : *Bryum* (*Eubryum*) *zygodontoides ; Bryum* (*Apalodictyon*) *rubro-costatum ; Bryum* (*Argobryum*) *argentatum ; Dicranum* (*Campylopus*) *naumanni ; Bartramia* (*Philonotula*) *subolescens ; Calymperes* (*Hyopholina*) *ascensionis ; Barbula* (*Hyophiladelphus*) *leucochlora ; Barbula* (*Hyophiladelphus*) *cuspidatissima ; Rhacopilum naumanni ; Hookeria* (*Callicostella*) *ascensionis.*

These mosses were collected by Dr Naumann, who was attached to the Prussian "Gazelle" Transit Expedition.

HEPATICÆ.

Jungermannia biapiculata, Tayl.

Jungermannia biapiculata, Tayl. in Hook. Lond. Journ. Bot., 1845, p. 81 ; G. L. et N., Synop. Hepat., p. 666.

ASCENSION.—Endemic. *Hooker.*

Jungermannia (Fegatella) limbata, Tayl.

Jungermannia (*Fegatella*) *limbata*, Tayl. in Hook. Lond. Journ. Bot., 1845, p. 95.

ASCENSION.

Mastigophora (Sendtnera) leioclada, Mitt.

Mastigophora (Sendtnera) leioclada, Mitt. in Melliss's St. Helena, p. 370.
Jungermannia leioclada, Tayl. in Hook. Lond. Journ. Bot., 1845, p. 85; G. L. et N., Synop. Hepat., p. 723 (*Sendtnera*).

ASCENSION.—Endemic. *Hooker; Moseley.*

The specimens exactly agree with those originally collected; they are found growing amongst *Campylopus.*

It is not improbable that they are a small or young state of the *Mastigophora diclados* so often gathered in Mauritius.

Symphyogyna convoluta, L. G. et N.

Symphyogyna convoluta, L. G. et N., Synop. Hepat., p. 485; Melliss, St. Helena, p. 372.
Jungermannia convoluta, Tayl. in Hook. Lond. Journ. Bot., 1845, p. 94.

ASCENSION.—Endemic. *Hooker.*

Lejeunia pterota, Tayl.

Lejeunia pterota, Tayl. in Hook. Lond. Journ. Bot., 1845, p. 91; L. G. et N., Synop. Hepat., p. 367.
Lejeunia ascensionis, Tayl. ibidem fide Mitten in Melliss's St. Helena, p. 371.

ASCENSION. *Hooker; Moseley.*

Also in St Helena.

Lejeunia, sp.

Lejeunia, sp.

ASCENSION. *Moseley.*

A minute species creeping on *Calymperes;* it has acute leaves, a large inflated lobule, and tripartite amphigastria; it is in too incomplete a state to afford characters whereby it might be recognised.

Frullania ericoides, Nees.

Frullania ericoides, Nees; G. L. and N. Synop. Hepat., p. 417.

ASCENSION. *Lesson.*

West Indies; South America; Polynesia; India; Java.

Plagiochasma limbatum, Nees.

Fegatella limbatum, Tayl. in Hook. Lond. Journ. Bot., 1845, p. 95; L. G. et N., Synop. Hepat., p. 516.

ASCENSION. *Hooker.*

Also in St Helena.

Marchantia crassa, A. Rich.

Marchantia crassa, A. Rich., Voy. "Astrolabe," Bot., p. li.

ASCENSION. *Lesson.*

This name is apparently not taken up in the Synopsis Hepaticarum, and the plant may not belong here.

Targionia hypophylla, Linn.

Targionia hypophylla, Linn., ex Rich., Voy. "Astrolabe," Bot., p. li.

ASCENSION. *Lesson.*

This name is cited by G. L. and N. (Synop. Hepat., p. 575), as a variety of *Targionia michelii*, Corda, a very widely dispersed species.

LICHENES.[1]

LICHENACEI.

CLADONIEI.

Cladonia amaurocræa, Schær.

Cladonia amaurocræa, Schær., Spicil., p. 4; Nyl., Synop. Lich., i. p. 216.
Cenomyce oxyceras, Acharius, Synop. Lich., p. 264; A. Rich., Sertum Astrolab., p. 51.

ASCENSION. *Lesson.*

Europe; Asia; America; Australia.

ROCCELLEI.

Roccella tinctoria, DC.

Roccella tinctoria, DC., Fl. Franc., ii. p. 334; Nyl., Synop. Lichen., i. p. 258; Acharius, Lich. Univ., p. 439.

ASCENSION. *Dr C. Collingwood.*

Atlantic Islands, including St Helena, and widely dispersed.

Roccella phycopsis, Acharius.

Roccella phycopsis, Acharius, Lich. Univ., p. 440; Nyl., Synop. Lich., i. p. 259.
Roccella gracilis, Bory in Duperr. Voy. "Coquille," Bot. Crypt., p. 239?

ASCENSION. *Lesson; Durville; Hooker.*

Mediterranean region; Atlantic Islands, including St Helena; Peru; Madagascar.

[1] The Rev. J. M. Crombie furnished a list of the Lichens collected by Mr Moseley, and to these have been added a few others recorded by A. Richard in his Sertum Astrolabianum, pp. 50 et 51.

RAMALINEI.

Ramalina pollinaria, Acharius.

Ramalina pollinaria, Acharius, Lich. Univ., p. 608; A. Rich., Sertum Astrolab., p. 51; Nyl., Synop. Lich., i. p. 296.

ASCENSION. *Lesson.*

Europe; Asia; Africa; West Indies; South America; St Helena.

This is included on the authority of Richard.

Ramalina polymorpha, Acharius.

Ramalina polymorpha, Acharius, Lich. Univ., p. 600, Synop. Lich., p. 295; Nyl., Synop. Lich., i. p. 293.

Ramalina implicata (errore pro emplecta, Acharius?) A. Rich., Sertum Astrolab., p. 51.

ASCENSION. *Lesson.*

Widely dispersed.

USNEEI.

Usnea trichodea, Acharius.

Usnea trichodea, Acharius, Meth. Lich., p. 312, t. 8, fig. 1; Nyl., Synop. Lich., i. p. 270; A. Rich., Sertum Astrolab., p. 50.

ASCENSION. *Lesson.*

Nova Scotia; Cuba; Cape of Good Hope; Bourbon; New Zealand; Java.

PARMELIEI.

Parmelia conoplea, Acharius.

Parmelia conoplea, Acharius, Synop. Lich., p. 213, ex A. Rich., Sertum Astrolab., p. 51.

ASCENSION. *Lesson.*

Parmelia saxatilis, Acharius.

Parmelia saxatilis, Acharius, Synop. Lich., p. 203; Nyl., Synop. Lich., i. p. 388; A. Rich., Sertum Astrolab., p. 51.

ASCENSION. *Lesson.*

Generally diffused.

PHYSCIEI.

Physcia leucomela, Michx.

Physcia leucomela, Michx., Fl. Bor.-Am., ii. p. 326; Nyl., Synop. Lich., i. p. 415, var. *angustifolia*; Mey. et Flot. in Nov. Act. Nat. Cur., xix., Suppl., i. p. 221; Crombie in Journ. Linn. Soc. Lond., xx. p. 83.

Borrera leucomela, Acharius, Lich. Univ., p. 499.

ASCENSION.—On the ground, amongst rocks—*Moseley.*

Widely spread.

Physcia pulverulenta, Fr.

Physcia pulverulenta, Fr., Lich. Europ., p. 79, ex Nyl., Synop. Lich., i. p. 419.
Parmelia pulverulenta, Acharius, Lich. Univ., p. 473, et Synop., p. 214; A. Rich., Sertum Astrolab., p. 51.

Ascension. *Lesson.*

Included on the authority of Richard, though Nylander gives the distribution as Europe, North Africa, and North America.

Physcia flavicans, DC.

Physcia flavicans, DC., Fl. Franc., vi. p. 189; Nyl., Synop. Lich., i. p. 406; Crombie in Journ. Linn. Soc. Lond., xx. p. 83.
Borrera flavicans, Acharius, Lich. Univ., p. 504; Bory in Duperr. Voy. "Coquille," Bot. Crypt., p. 238.

Ascension.—On rocks, &c.—*Lesson; Hooker; Moseley.*

Widely spread.

Physcia adscensionis, Crombie.

Physcia adscensionis, Crombie in Journ. Linn. Soc. Lond., xvi. p. 212.
Lecanora adscensionis, Acharius, Lich. Univ., p. 422, Synop. Lich., p. 179.

Ascension.

Mr Crombie enumerates this among the Lichens collected in the Cape Verde Islands by Mr Moseley.

In Kew Herbarium is a *Physcia*, probably *Physcia astroidea*, Fries, collected in Ascension by Dr C. Collingwood.

FUNGI.

We are not aware that a single species of this family has been collected in the island.

ALGÆ.

MELANOSPERMEÆ.

Fucaceæ.

Sargassum lendigerum, K. A. Agardh.

Sargassum lendigerum, K. A. Agardh, Sp. Alg. i. p. 9; J. G. Agardh, Sp. Alg., i. p. 340; Bory in Duperr. Voy. "Coquille," Bot. Crypt., p. 125.
Fucus lendigerus, Linn., Sp. Pl., ed. 1, p. 1160; Turner, Hist. Fuc., t. 48.

Ascension.—Maritime rocks—*Hooker.*

Also collected by Durville, and the species was founded by Linnæus on a specimen collected at Ascension by Osbeck.

Shores of the Atlantic, and on the Pacific coast of South America.

Chordariaceæ.

Chordaria sordida, Bory.

Chordaria sordida, Bory in Duperr. Voy. "Coquille," Bot. Crypt., p. 139; J. G. Agardh, Sp. Alg., i. p. 67.

Ascension. *Durville.*

An obscure species not identified by writers subsequent to Bory.

Rhodospermeæ.

Rhodomelaceæ.

Acanthophora muscoides, Bory.

Acanthophora muscoides, Bory in Duperr. Voy. "Coquille," Bot. Crypt., p. 156; J. G. Agardh, Sp. Alg., ii. p. 816.
Acanthophora delilei, Harv., Nereis Bor.-Am., ii. p. 18.
Acanthophora militaris, Lamour., Ess., p. 44, t. 10, figg. 4 et 5.
Fucus muscoides, Linn., Sp. Pl., ed. 1, p. 1161.

Ascension. *Osbeck; Durville.*

Florida; West Indies; South Africa.

We have seen no Ascension specimens; yet the species was founded upon those collected there by Osbeck.

Ceramiaceæ.

Boryna compacta, Bory.

Boryna compacta, Bory in Duperr. Voy. "Coquille," Bot. Crypt., p. 221.

Ascension. *Durville.*

An obscure plant, of which the above is the only record we have found. Bory states that it was intermixed with *Acanthophora muscoides.*

ST HELENA.

INTRODUCTORY NOTES.

St Helena is situated about 700 miles south of Ascension, and lies in lat. 15° 55′ S., and long. 5° 42′ W., or about 1100 miles from the coast of Africa, and 1800 miles from the nearest part of America. It is about ten miles long by eight miles broad, and is wholly volcanic, its surface being very rugged, irregular, and mountainous; and its greatest height is 2700 feet above sea-level. Nearly the whole of the coast-line consists of a wall of rock, rising in places to a height of 2000 feet, and broken only by narrow ravines that radiate from the centre of the island and increase in size and depth towards the coast. The estimated area of the island is 28,000 acres, whereof two-thirds at least are now waste.

The climate is described as one of the most equable and enjoyable in the world, being free from thunderstorms and hurricanes. The mean temperature for five years (1841 to 1845 inclusive) at Longwood, an altitude of 1764 feet, was 61·4° Fahr.; the lowest during this period was 52°, and the highest 77·6°; and the annual rainfall at the same place is about 44 inches. Descending towards the coast there is an increase of temperature with a smaller rainfall, and in Jamestown itself the heat is oppressive in summer. In the higher parts of the island there is a considerably larger rainfall than at Longwood, with, of course, a lower temperature.

Melliss[1] distinguishes three climatic zones characterised by different plants. The first is a rocky belt extending all round the coast and for a mile inland; it possesses a hot scorching atmosphere, 10° Fahr. higher in temperature than the mountain-top, and ranges in altitude from the sea-level up to 2272 feet. Except in the sheltered and watered ravines it is very barren.

The second or middle zone lies inside of the first, extending for three-quarters of a mile inland, and varying in altitude from 400 to 2000 feet. It is less rocky than the outer zone, its temperature is 5° Fahr. lower, and its vegetation is scanty.

The third zone consists of the centre of the island, an area about four miles long and two and a quarter miles wide, varying from 1200 feet to the highest summits. It has a deep soil, and is entirely covered with vegetation.

Vegetation—Historical Sketch.[2]

St. Helena was discovered by a Portuguese, Jean de Noya, in 1501, on the 18th of August, St. Helena's day, hence the name the island bears. At that date it was

[1] St Helena, p. 231.

[2] For many of the facts in this sketch we are indebted to Sir Joseph Hooker's Lecture on Insular Floras, read before the British Association for the Advancement of Science in 1866, and printed in the *Gardeners' Chronicle* for 1867.

entirely covered with forests, the trees drooping over the tremendous precipices that overhang the sea. Now nearly the whole of the indigenous vegetation has disappeared, except on the upper part of the Central Ridge, and is only very partially replaced by introduced plants, in consequence of the soil having been washed off from its rocky foundation since the destruction of the forests.

When the island was discovered, no mammals existed there, and vegetation dominated everywhere; but the great anxiety of the early voyagers to provide meat for future travellers, who, by design or accident, should visit such remote places, led to the introduction of hogs and goats; and the latter, chiefly, effected the destruction of the native vegetation. They were introduced in 1513, and multiplied so rapidly, that in 1588 Captain Cavendish states that they existed in thousands, single flocks being almost a mile long.

In 1709 trees still abounded, and one, the native Ebony (*Melhania melanoxylon*), in such quantities that it was used to burn lime with. In 1745, however, the governor of the island reported to the Court of Directors of the East India Company that the timber was rapidly disappearing, and that the goats should be destroyed for the preservation of the Ebony, and because the island was suffering from droughts. He was instructed not to destroy the goats, "as they were more valuable than Ebony."[1] Another century elapsed, and in 1810 another governor reports the total destruction of the great forests by the goats, which greedily devour the young plants and kill the old by browsing on their leaves and bark, and that fuel was so scarce that the Government paid for coal (and this in a tropical climate) £2729, 7s. 8d. annually. Still, even then, so great was the amount of seed annually shed, so rich the soil, and so rapid the growth of the native plants, that the governor goes on to say, that if the goats were killed and the island left to itself, it would in twenty years be again covered with indigenous vegetation.

About this time the goats were killed, but another enemy to the indigenous vegetation was at the same time introduced, and which has now rendered it certainly impossible that the native plants will ever again resume their sway. Major-General Beatson proposed and carried out the introduction of exotic plants on a large scale, the results of which are revealed in the continuation of this sketch.

It is not a little remarkable that, except in the general way indicated, almost nothing was known of the vegetation of St Helena before the beginning of the present century. The singular *Pelargonium cotyledonis* was introduced into English gardens as early as 1765, but when Linnæus described it in 1771, he recorded it as a South African plant, though its origin was known in this country. On the homeward route of his first voyage, Cook touched at St Helena and remained a few days; yet the botanists, the two Forsters, either collected very few plants or subsequently lost their collection, for in his report on the botany of the Atlantic Islands,[2] G. Forster cites only six species from St

[1] Tracts relative to the Island of St Helena, by Major-General A. Beatson. London, 1816.

[2] Plantæ Atlanticæ ex insulis Madeira, S. Jacobi, Adscensionis, S. Helenæ et Fayal Reportatæ in Comment. Soc. Gœtt., ix. (1787), pp. 13–74.

Helena, namely: *Anthoxanthum odoratum*, *Panicum crus-corvi*, *Alopecurus paniceus*, *Pentapetes erythroxylon*, *Psoralea aphylla*, and *Spilanthus arboreus;* and of these only two are indigenous. *Melhania melanoxylon*, and perhaps one or two more of the endemic plants, were imported and cultivated in this country towards the end of the last century, otherwise nothing further was known of the botany until the beginning of the present century. In 1805, Dr W. J. Burchell, who afterwards distinguished himself as a traveller in South Africa and Brazil, arrived at St Helena, where he remained until 1810; and during these five years he thoroughly botanised the island. Unfortunately for science, he never published anything, and scarcely allowed any naturalist access to any part of his herbarium. On his death, in 1865, his magnificent botanical collections, including the St Helena Herbarium, were presented by his sister to the Kew Herbarium; and Sir Joseph Hooker made use of it for the Lecture on Insular Floras referred to at the beginning of this sketch. The whole of Burchell's vast herbarium was in an excellent state of preservation, and it was supplemented by copious manuscript notes and descriptions of plants, especially of the St Helena plants. Indeed, there is a manuscript Flora Heleniana, written during his sojourn in the island, from which we have drawn much valuable information. This is only a fragment, yet it contains full and accurate descriptions of a considerable number of the endemic plants, with the names he proposed for them: and the bulk of them had at the date of his writing not been published. There is also a fine collection of sketches of the scenery of St Helena, and drawings of the plants, executed by Dr Burchell. This was presented to the Kew Library by Sir Joseph Hooker, to whom it was given by Miss Burchell when she became aware of the great interest he took in the flora of the island. The St Helena collection of dried plants consisted of 198 species of phænogams and ferns, and included all the indigenous plants known to exist, or to have existed, and several that are not represented, so far as we are aware, in any other collection. Dr Burchell, therefore, had collected full materials for a flora in the first decade of the century; yet hitherto no complete enumeration of the plants has been published, about half-a-dozen of them being described for the first time in this work. Nevertheless, nearly the whole of Burchell's descriptive work has been forestalled and his proposed names superseded. From St Helena, Burchell went to South Africa, where he travelled and collected for a period of five years; and the enormous collections he made there, and afterwards in Brazil, were perhaps the primary cause that prevented him from publishing a flora of St Helena.

Soon after Burchell left St Helena, another botanist appeared on the scene. This was Dr Roxburgh, the noted Indian botanist, who on his way home to England in enfeebled health, stayed in the island from the 7th of June 1813, to the 1st of March 1814. In spite of bad health, Roxburgh nearly exhausted the botany, and compiled a catalogue of the plants collected or seen, and described a large number of the indigenous plants for the first time. This catalogue was published as an appendix to Beatson's Tracts relative to the Island of St Helena, in 1816, after the author's death, or it would doubtless not have

appeared in such an imperfect form. A useful feature in this list is the distinction of indigenous and exotic plants, which is nowhere attempted by Burchell. Of the former category there are fifty-eight, including two or three obviously designated exotic by mistake. Besides the descriptive matter, the catalogue contains some interesting particulars of the relative frequency or rarity of a few of the species.

The naturalists of the French exploring expedition (Duperrey in "La Coquille"), 1822–1825, collected plants in St Helena; but the botany of the expedition was never completed, only the cryptogams and the grasses having been published, by Bory de St Vincent and Brongniart respectively.

Based upon Roxburgh's work, two mere lists[1] of the introduced and indigenous plants were published, but they are utterly devoid of botanical interest. A sketch of the flora appeared in Antomarchi's Derniers Moments de Napoléon (Paris, 1825). This we have not seen, but De Candolle, referring to the works just noticed, designates it[2] "la moins pitoyable des quatres Flores publiées jusqu'à présent." A fair estimate of its merits may be arrived at from the fact that forty-three species of ferns are enumerated without any indications of which are native, and so on in other orders.

Omitting the names of numerous small contributors of dried specimens of St Helena plants to Kew and the British Museum, which are cited under the plants they contributed, there is nothing of importance to note previous to 1840. In that year Dr (now Sir Joseph) Hooker, who was attached to Sir James Ross's Antarctic Expedition, had an opportunity of spending nine days on the island, and he made as complete a collection of the indigenous plants as he could at the season (Jan. and Feb.); yet he did not find one species that had not been previously collected, and several of those in the earlier collections had become so rare that he did not succeed in getting specimens. On the homeward voyage (May 1843) a few more days were spent on the island.

In 1851, H.M.S. "Herald" touched at St Helena, and Dr B. Seemann, the naturalist of the expedition, made a considerable collection of dried plants, which are at Kew.

Subsequent to the publication of his Lecture on Insular Floras, Sir Joseph Hooker described and figured a number of the more interesting St Helena plants,[3] and since then nothing of importance has appeared except Melliss's St Helena.[4] This work deals with every branch of natural history, as well as geology, meteorology, &c.; and it is a most interesting book, though, as might be expected where an author attempts so wide a range of inquiry, it is defective in some of its details. The botany is perhaps the least

[1] (1.) Flora Santa Helenica [Beatson], St Helena. Printed by J. Boyd, 1825.

(2.) An Alphabetical List of Indigenous and Exotic Plants growing on the Island of St Helena, compiled by Stephen F. Pritchard. Printed by G. J. Pike, 11 St George's Street, Cape Town, 1836.

[2] Geographie Botanique, ii. p. 1218 (1855).

[3] Hooker's Icones Plantarum, xi. (1867–71).

[4] St Helena: A Physical, Historical, and Topographical Description of the Island. By John Charles Melliss. London, 1875.

satisfactory part in some respects; but as it contains coloured figures of nearly all of the endemic plants, besides copious notes on their condition, it is by no means the least valuable. Mr Melliss resided in the island for some years, and during his residence he collected and transmitted to Kew specimens of all the endemic plants collected by Burchell, except perhaps about half-a-dozen. Unfortunately, Melliss followed Roxburgh's example, and included native and introduced plants in one general list, which is extended to 1058 species, so that the native element is as it were overpowered by the exotic. Then there is no attempt to elaborate the synonymy and exhaust the literature of each species, and a few species are omitted altogether. The *Cyperaceæ* and *Gramineæ* had not been critically examined, and several of the indigenous ones had not been described; hence the enumeration is imperfect for these orders. Apart from these defects, the work is most valuable and useful, and we are greatly indebted to the author for particulars respecting the distribution and relative rarity of a large number of the species up to the date of his work.

The only contribution to our knowledge of the flora of St Helena later than Mr Melliss's book is a collection of plants made by Mr D. Morris, Director of Public Gardens and Plantations in Jamaica, in 1883.[1] Mr Morris visited the island for the purpose of reporting to the Colonial Office on its agricultural resources, and during the little spare time he had, collected specimens of nearly all the native ferns as well as thirteen endemic flowering plants, and his name with the date affixed is cited under each of those plants.

Actual Condition of the Vegetation of St Helena—
The Indigenous Element.

The present enumeration includes only such plants as may have reached the island by natural agencies; and these[2] may be classified in three groups, namely: certainly indigenous, probably indigenous, and doubtfully indigenous; those of the last category being mostly such generally diffused plants that it is impossible to say where they are really native. The numbers are:—

	Species.
Certainly indigenous	65
Probably „	24
Doubtfully „	5
Total	94

[1] A Report upon the Present Position and Prospects of the Agricultural Resources of the Island of St Helena, with a map showing the three zones of vegetation. By D. Morris. Colonial Office, 1884.

[2] Here, as in other comparisons, only the vascular plants are taken into consideration.

Tabular View of the Certainly Indigenous Vascular Plants of St Helena.[1]

FRANKENIACEÆ.

1. Frankenia portulacæfolia. Shrub.

STERCULIACEÆ.

2. Melhania melanoxylon. Tree.
3. Melhania erythroxylon. Tree, 20 feet.

GERANIACEÆ.

4. Pelargonium cotyledonis. Half shrub.

RHAMNEÆ.

5. Phylica ramosissima. Shrub, 12 feet.
6. Nesiota elliptica. Tree, 18 feet.

FICOIDEÆ.

7. Mesembryanthemum cryptanthum. Perennial herb.
8. Pharnaceum acidum. Half shrub.

UMBELLIFERÆ.

9. Sium burchellii. Perennial herb.
10. Sium helenianum. Perennial herb.

RUBIACEÆ.

11. Hedyotis arborea. Tree, 20 feet.

COMPOSITÆ.

12. Commidendron burchellii. Tree.
13. Commidendron spurium. Tree.
14. Commidendron robustum. Tree, 20 feet.
15. Commidendron rugosum. Tree, 10 feet.
16. Melanodendron integrifolium. Tree, 15 feet.
17. Psiadia rotundifolia. Tree, 20 feet.
18. Petrobium arboreum. Tree, 20 feet.
19. Senecio leucadendron. Tree, 12 feet.
20. Senecio prenanthiflora. Tree, 15 feet.
21. Tripteris burchellii. Annual herb.

CAMPANULACEÆ.

22. Lobelia scævolæfolia. Shrub.
23. Wahlenbergia angustifolia. Perennial herb.
24. Wahlenbergia linifolia. Half shrub.
25. Wahlenbergia roxburghii. Perennial herb.
26. Wahlenbergia burchellii. Perennial herb.

PLANTAGINEÆ.

27. Plantago robusta. Half shrub.

BORAGINEÆ.

28. Heliotropium pannifolium. Shrub.

SOLANACEÆ.

29. Mellissia begonifolia. Shrub, 8 feet.

EUPHORBIACEÆ.

30. Acalypha rubra. Shrub.

CYPERACEÆ.

31. Fimbristylis neglecta. Perennial herb.
32. Fimbristylis lichtensteiniana. Perennial herb.
33. *Scirpus nodosus.* Perennial herb.
34. Carex æquabilis. Perennial herb.
35. Carex prælta. Perennial herb.

GRAMINEÆ.

36. Agrostis simulans. Perennial herb.
37. Eragrostis saxatilis. Perennial herb.
38. Demazeria oblitera. Perennial? herb.

LYCOPODIACEÆ.[2]

39. *Lycopodium saururus.*
40. *Lycopodium cernuum.*

FILICES.

41. Dicksonia arborescens. Tree, 20 feet.
42. Hymenophyllum capillaceum.
43. *Cheilanthes multifida.*
44. *Pteris flabellata.*
45. Pteris paleacea.
46. *Asplenium erectum.*
47. Asplenium nigro-paleaceum.
48. *Asplenium compressum.*
49. Asplenium platybasis.
50. *Asplenium furcatum.*
51. *Nephrodium patens.*
52. *Nephrodium molle.*
53. Nephrodium cognatum.
54. Nephrodium napoleonis.
55. *Polypodium lanceolatum.*
56. *Polypodium marginellum.*
57. Polypodium molle.
58. *Polypodium rugulosum.*
59. Gymnogramme haughtoni.
60. *Monogramme graminioides.*
61. Acrostichum dimorphum.
62. Acrostichum bifurcatum.
63. Acrostichum nervosum.
64. *Acrostichum conforme.*
65. *Ophioglossum vulgatum.*

[1] The names of the plants peculiar to the island are in Roman type.

[2] It is assumed that all the wild vascular cryptogams are indigenous.

Of the sixty-five species in the foregoing table, twenty-seven are vascular cryptogams, one of which is arboreous; and of the thirty-eight flowering plants, twenty are shrubs or small trees. The trees are all small, and some of them mere miniatures of trees; still they are called trees because they are not bushy.

With one exception, *Scirpus nodosus* (*Fimbristylis textilis*), the thirty-eight flowering plants are not only indigenous, but likewise endemic, having never been found in any other part of the world. The solitary exception has been admitted, because Roxburgh and other botanists who have visited the island have regarded it as one of the native plants. Out of twenty-seven vascular cryptogams, twelve are endemic—a proportion that is barely exceeded in an eminently fern flora like that of New Zealand.

The twenty-four probably indigenous species, or such as may have reached the island independently of human agency, are :—

Senebiera heleniana, Portulaca oleracea, Oxalis corniculata, Psoralea pinnata, Cotula coronopifolia, Ipomœa biloba, Dichondra repens, Boerhaavia verticillata, Suæda fruticosa, Exomis axyrioides, Euphorbia, sp., *Lemna minor, Juncus bufonius, Juncus lomatophyllus, Cyperus distans, Cyperus umbellatus, Cyperus lævigatus, Cyperus polystachyus, Cyperus difformis, Cyperus rotundus, Cyperus eragrostis, Kyllinga monocephala, Scirpus setaceus*, and *Sporobolus indicus*.

So far as some of the foregoing plants are concerned, the probabilities as to their being indigenous or introduced are pretty evenly balanced, while in other cases they preponderate against their being indigenous.

It has already been stated that the indigenous element of the present vegetation is now practically limited to, or at least only a prominent feature in it, high up in the Central Ridge; and this general statement needs very little qualification even if used in a more extended sense, as may be gathered from the remarks under each species. Still, in spite of the great rarity of many of the native species, fewer have disappeared altogether than might at first be supposed. By diligent search, Melliss rediscovered several that had been given up as wholly lost; and we have positive evidence of the absolute extinction of only two, namely, *Melhania melanoxylon* and *Acalypha rubra*, though the presumptive evidence is strong as to other two—*Heliotropium pannifolium* and *Demazeria oblitera*. How many were extirpated by the goats before the flora was investigated we shall never know: it may have been considerable, but judging from the facts before us and the characteristic poverty in species of insular floras generally, we should think not. Assuming that a portion of the flora has been lost, the remnant may be regarded as a representative sample of the whole.

The following extracts from Melliss's St Helena give a good idea of the condition of the indigenous vegetation during his residence in the island down to 1875 :—

"The green vegetation once seen clothing the island to the water's edge, was doubtless, with some lost species, Ebony (*Melhania melanoxylon*), Scrubwood (*Commidendron rugosum*), *Frankenia*, *Mellissia*,

Plantago, Mesembryanthemum, Pelargonium, Pharnaceum, and *Tripteris*, these still occurring on the outer and lower zone near the sea, with perhaps the addition of the Rosemary (*Phylica ramosissima*) and Gumwood (*Commidendron robustum*), which now occupy an intermediate zone between the outskirts and the central highest parts of the islands, where all the rest of the remaining indigenous plants grow. This vegetation was probably so thick as to prevent the existence of grass, the absence of which is remarkable in the native flora,[1] only one species being found, and that confined to the high land.

"Viewing, in the present day, the dry, barren, soilless, frowning, lichen-coated, rocky outskirts of the island, it would require strong faith to realise its ever having been green with vegetation were it not that the record of such a fact is endorsed by the Ebony trunks and stems still existing where no vestige of life can now be found; and also by the manuscripts preserved at the castle, telling of localities where Ebony was gathered for fuel, and Gumwood felled for building purposes, where now no trace of either can be seen. Persons living on the island can also recollect losing their way in the Gumwood forests at Longwood, where now grassy plains with scarcely a tree exist.[2]

"Of the low land plants, the Scrubwood (*Commidendron rugosum*) is perhaps the most abundant now remaining; and next to that the *Frankenia*. Most of the others are found only as isolated individuals; but all of those which occupy the outer portion of the island are scarcer than *Phylica ramosissima* and *Commidendron robustum*, which are plants of the mid-altitude; and these in their turn are less plentiful than some of the high land species. The most abundant indigenous plant at present is undoubtedly the Whitewood Cabbage-tree (*Petrobium arboreum*); the Blackwood or Black Cabbage-tree (*Melanodendron integrifolium*) is the next; while next in order of quantity comes the He Cabbage-tree (*Senecio leucadendron*), followed by the She Cabbage-tree (*Senecio prenanthiflora*), with the Dogwood (*Hedyotis arborea*) perhaps taking the next position. Some species have dwindled down to a single plant; this is the case with *Psiadia rotundifolia*, which had almost been classed with the extinct species, until after long and patient search I experienced the great delight of finding one tree[3] of it in the Black field at Longwood Gate. It is an old tree, probably the only one alive anywhere, and likely soon to share the fate of the Ebony and Stringwood (*Acalypha rubra*), both of which, after much careful seeking for them, I am inclined to believe exist no longer.

"I saw the Ebony once about twenty years ago. It was growing in a garden on the high land, a miserable little plant only six inches in height, and yet it blossomed.

"The beautiful little Stringwood I last saw about fourteen years ago, growing as a carefully tended plant in the garden at Oakbank. It was only about eighteen inches high, though flowering freely."[4]

From the foregoing it is clear that the native element in the present vegetation, although still represented by at least sixty endemic species of vascular plants, without counting twenty-four others that are probably or possibly indigenous, is inappreciable, except in a few localities and especially high up in the Central Ridge.

[1] We recognise three native grasses, of which only one is at all common.

[2] From the manuscript records quoted by Melliss, we learn that if the goats and exotic plants introduced into St Helena are largely answerable for the destruction of the native vegetation, man himself is much to blame for completing it, for he certainly cut down large areas of the original forests.

[3] This still existed in 1883, when Mr Morris brought home a few branchlets bearing flowers.

[4] In the enumeration of the plants Melliss adds, "but is now no longer there."

The Exotic Element.

For details of the exotic element in the present vegetation of St Helena, we are almost wholly indebted to Melliss, who enumerates about 970 species, supplemented by remarks on their distribution, &c. Upwards of half of them are only cultivated, or are rare in a wild state, while others are only common in certain localities. The residue of thoroughly naturalised species is made up of plants from the most distant countries, the curious mixture reminding one more of a botanic garden than anything else. From the following list of the commoner species, it will be seen that European plants figure prominently in the scenery :—

Ranunculus sceleratus, Argemone mexicana, Fumaria capreolata, Capsella bursa-pastoris, Nasturtium officinale, Senebiera didyma, Hypericum hircinum, Cerastium glomeratum, Althæa officinalis, Malva sylvestris, Malva parviflora, Melia azedarach, Erythrina caffra, Medicago denticulata, Ulex europæus, Acacia longifolia, Acacia lophantha, Rubus pinnatus, Opuntia vulgaris, Ageratum conyzoides, Helichrysum bracteatum, Gnaphalium luteo-album, Senecio vulgaris, Cryptostemma calendulaceum, Hypochæris radicata, Sonchus oleraceus, Plantago major, Buddleia madagascariensis, Brugmansia suaveolens, Datura tatula, Datura fastuosa, Physalis peruviana, Solanum nigrum, Gomphocarpus fruticosus, Atriplex capensis, Chenopodium murale, Amarantus blitum, Achyranthes aspera, Cluytia pulchella, Euphorbia peplus, Ricinus communis, Urtica dioica, Quercus robur, Populus alba, Salix babylonica, Pinus pinaster, Richardia æthiopica, Coix lachryma, Paspalum scrobiculatum, Stenotaphrum americanum, Panicum maximum, Setaria verticillata, Gymnothrix caudata, Anthoxanthum odoratum, Poa annua, Cynodon dactylon, Eragrostis poæoides, Festuca bromoides, and *Bromus vestitus:* total, 59 species.

We have probably omitted a score or two of species that are equally as common as some of those we have enumerated; but our object is fully served by the selection given. Particulars respecting a few of those that are most striking in the landscape, and constitute the physiognomy of the vegetation, may be interesting.

Ulex europæus.—The English furze is perhaps the commonest shrub in the island, covering acres of the outskirts of the high land. It is used for fuel, and many natives make a living by cutting it and taking it into the town.

Rubus pinnatus.—A native of Africa and the Mascarene Islands, introduced in 1775,[1] and now exceedingly common everywhere above an elevation of 1500 feet.

Hypochæris radicata.—Europe, &c. Melliss says this plant is the dandelion of St Helena, where in meadows its yellow flower-heads are as thick as daisies in English meadows.

[1] On the authority of Melliss. Roxburgh states that the inhabitants regarded it as an introduced plant, though they disagreed as to its origin.

Buddleia madagascariensis.—One of the most abundant and objectionable plants in the island, and much used for hedging; but it soon overruns acres of land and climbs over the tallest trees.

Physalis peruviana.—Very common at altitudes of 1000 to 2000 feet, and yielding large quantities of fruit, which is collected and taken to market.

Chenopodium murale.—An abundant weed.

Rumex acetosella.—Common in meadows in the upper region.

Ricinus communis.—The castor-oil plant is very common from an elevation of 50 up to 1500 feet.

Quercus robur.—The oak was introduced in 1749, and thrives well on the high land, where, in the ravines and hollows, it gets sufficient shelter and depth of soil. It is abundant and grows side by side with the banana, the *Calla æthiopica*, and the bamboo; the latter, in some instances, may be seen shooting up through its branches and drooping over its topmost foliage. An oak-tree growing in the grounds at Government House, in 1875, measured twelve feet to the first branch and thirteen feet in circumference. Another measured ten feet to the first branch and twelve feet in circumference, and both were fifty feet high. The oak is one of the most thoroughly naturalised trees, bearing acorns abundantly.

Pinus pinaster and *Pinus sylvestris.*—The former, Melliss states, is much more abundant than the latter, being one of the commonest trees on the island. It grows freely, and produces seed which springs up without care. In various parts there were, in 1875, about two hundred acres thickly planted with this fir, which does not succeed, however, below 1500 feet. There were many trees upwards of sixty feet high, with straight, unbranched trunks, thirty or forty feet long, and ten feet in circumference.

Such is the composition of the present vegetation of St Helena, whose former flora is doomed to utter extinction, if some measures are not soon taken to preserve the meagre remains. In the report referred to above, Mr Morris suggests that the forest vegetation on the Central Ridge should be preserved and extended, if only for the sake of preventing the springs from drying up.

Origin of the Indigenous Vegetation of St Helena.

The indigenous plants of St Helena fall naturally into two groups or elements, ancient and modern; the former consisting entirely of endemic forms, though not comprising all the species which are apparently endemic in the island; and the latter, all those species enumerated on p. 55 as probably indigenous, together with such endemic species as *Mesembryanthemum cryptanthum*, *Tripteris burchellii*, *Agrostis simulans*, *Demazeria oblitera*, and perhaps some others. These plants have not the peculiar insular stamp characteristic of the plants which formerly constituted the bulk of the vegetation, and most likely they did not reach the island until a much later period. For the greater part,

they belong to types of the widest dispersion, which may have been introduced through the agency of man, direct or indirect; whilst others are maritime plants which owe their presence to the action of the sea. In treating of the origin of the flora of St Helena, we should, therefore, exclude this modern element and confine ourselves to the facts relating to the ancient element. Sir Joseph Hooker,[1] with practically the same facts before him (for the small accession of species in the present work could in no way modify them), was of opinion that, on the whole, the affinities of the flora were with the South African. "From such fragmentary data," he says, "it is difficult to form any exact conclusions as to the affinities of this flora, but I think it may safely be regarded as an African one, and characteristic of Southern extra-tropical Africa. The genera *Phylica*, *Pelargonium*, *Mesembryanthemum*, *Osteospermum* [*Tripteris*] and *Wahlenbergia* are eminently characteristic of Southern extra-tropical Africa, and I find amongst the others scarce any indication of an American parentage, except a plant referred to *Physalis*" [*Mellissia*].

In arriving at this conclusion Sir Joseph Hooker does not appear to have specially considered the arboreous *Compositæ*, some of which find equal or closer affinities among American types. They number nine species, and are here referred to five genera. At a later date, Mr Bentham, in his admirable essay on the *Compositæ*,[2] set forth his views of the relationships of the St Helena forms in the following words: "The expiring flora of the isle of St Helena is as remarkable in *Compositæ* as in other orders, in its distant connections. Although nearer to Africa than to any other continent, those denizen *Compositæ* which bear evidence of the greatest antiquity have their affinities for the most part in South America, whilst the colonists of a more recent character are South African. Seven endemic species[3] are known—*Commidendron*, four species, and *Melanodendron*, *Petrobium*, and *Psiadia*, one species each.[4] All, except one species of *Commidendron*, have more or less of the insular arborescent character. *Commidendron* and *Melanodendron* are among the woody Asteroid forms exemplified in the Antarctic-American *Chiliotrichium*, in the Andine *Diplostephium*, and in the Australasian *Olearia*. *Petrobium* is one of three genera, remains of a group probably of great antiquity, of which the two others are *Podanthus* in Chili and *Astemma* in the Andes. The *Psiadia* is an endemic species of a genus otherwise Mascarene, or of Eastern Africa, presenting a geographical connection analogous to the St Helena *Melhaniæ* with the Mascarene *Trochetia*."

From the foregoing it would seem that the ancient element in the indigenous vegetation is the remnant of a flora that was formerly spread over a wide area, and is now only represented in isolated distant spots; and that certain types of this flora, the

[1] Lecture on Insular Floras, reprint, p. 7.

[2] Notes on the History, Classification, and Geographical Distribution of the Compositæ, *Journ. Linn. Soc. Lond.*, (Botany) vol. xiii. p. 563.

[3] Including the annual *Tripteris burchellii*, there are ten endemic species.

[4] The two very remarkable species of *Senecio* are not taken into account.

arboreous *Compositæ* of the same tribe as the St Helena, for instance, are no longer found in South Africa, whatever their earlier distribution may have been. But the American affinity of some of them does not necessarily involve an American origin, for, as we shall show in our general introduction, the present distribution of arboreous *Compositæ* presents many anomalies. It should be borne in mind, too, that these *Compositæ* differ little in floral structure from the Cape shrubby *Feliciæ*. The flora of the Tristan da Cunha group exhibits similar, yet closer, affinities with the American flora on the one hand, and the Mascarene on the other; and associated with the plants of these affinities is a modern element comprising apparently endemic species of such genera as *Chenopodium*, *Atriplex*, *Rumex*, &c.

The following tabular view of the distribution and affinities of the genera of the endemic flowering plants of the island illustrates the peculiarities of the composition of the flora, and enables us at the same time to appreciate the difficulties to be encountered in an attempt to trace its origin to one source.

TABLE *Showing the Affinities of the Species and Genera and Distribution of the Genera of the Endemic Flowering Plants of St Helena.*

Name.	Affinities of the Species, &c.	Distribution of the Genera.
1. *Frankenia*	The St Helena species is so markedly distinct from all the others, that it was raised to the rank of a separate genus by Roxburgh.	Widely spread, including South Africa, most of the species being purely littoral.
2. *Melhania*	In habit the St Helena species closely resemble *Trochetia*, a genus confined to Mauritius and Madagascar; but the floral structure is quite that of *Melhania*.	Africa (including South), Asia, and Australia.
3. *Pelargonium* . . .	Very distinct.	Species very numerous in South Africa; one, or more, widely dispersed in the south temperate zone and two or three in North-East Africa and the Levant.
4. *Phylica*	Distinct.	A large genus confined to South Africa and the islands of the Atlantic and Indian Oceans.
5. *Nesiota*	Next to *Phylica*.	Endemic.
6. *Mesembryanthemum*	"Closely allied to *Mesembryanthemum nodiflorum* of North and South Africa."	Chiefly South African; also in Australia, New Zealand, Mediterranean region, and Arabia.
7. *Pharnaceum* . . .	Differs from the other species in the entire stipules and very unequal sepals.	South Africa.
8. *Sium*	Not closely allied to any other species.	Three or four species having a wide range in the temperate zones of both hemispheres, including South Africa.
9. *Hedyotis*	Arboreous, and characterised by its unisexual flowers and short rotate corolla.	A large and widely dispersed genus, including South Africa.

Name.	Affinities of the Species, &c.	Distribution of the Genera.
10. *Commidendron* . .	Asteroid, near the American genera *Chiliotrichium* and *Diplostephium* and the Australasian *Olearia*.	Endemic.
11. *Melanodendron* . .	As the last.	Endemic.
12. *Psiadia*	A very distinct species.	East Africa and Mascarene Islands.
13. *Petrobium*	Next to the Chilian *Podanthus*.	Endemic.
14. *Senecio*	Two very distinct species, regarded by some botanists as constituting two independent genera.	Generally spread, including South Africa.
15. *Tripteris*	Allied to South African species.	Africa, almost wholly southern.
16. *Lobelia*	A distinct species.	Widely dispersed, South Africa inclusive.
17. *Wahlenbergia* . .	Allied to African and Juan Fernandez species.	Widely dispersed, with the greatest concentration of species in Africa.
18. *Plantago*	A very marked species.	Generally spread, including South Africa.
19. *Heliotropium* . . .	Habit and foliage of a *Tournefortia*, with floral structure of *Heliotropium*.	General in warm countries, including South Africa.
20. *Mellissia*	Shrubby, but otherwise nearly related to the American genus *Saracha*.	Endemic.
21. *Acalypha*	Allied to Mascarene species.	General in warm countries, including South Africa.
22. *Fimbristylis* . . .	No special affinities.	Widely spread, including South Africa.
23. *Carex*	With Mascarene and a Bermudan species.	Widely spread, including South Africa.
24. *Agrostis*	No marked characteristic.	Widely spread, including South Africa.
25. *Eragrostis*	A very marked species.	Widely spread in warm countries, including South Africa.
26. *Demazeria*	Closely allied to the South African *Demazeria acutiflora*.	Mediterranean region and South Africa.

Out of twenty-six genera, twenty are represented in South Africa, but sixteen of these have also a wider, and mostly a very wide, area of distribution; two are East African and Mascarene; and of the four endemic genera three have their greatest affinity among South American types, and the other one is nearest to the African *Phylicæ*.

The fact that recent explorations in Eastern Tropical Africa have brought to light several additional species of *Psiadia*, and the presence of many arboreous *Compositæ* in South America and Australia, as well as in South Africa and India, go to prove that this type is not essentially an insular one, though insular conditions seem favourable to its development and survival. Arboreous *Compositæ* are a prominent feature in the present floras of Juan Fernandez, the Sandwich Islands, Canaries, &c.; but in each case they belong to different tribes. Another point for consideration is the means by which these *Compositæ* were conveyed to the island. Their light pappose achenes are admirably adapted for wide dispersal, yet less so to such enormous distances than the seeds and seed-vessels of many other plants. But as we intend restricting these introductory notes on the vegetation of each island or group of islands mainly to the record of facts, we shall not pursue this inquiry farther in this place.

ENUMERATION OF THE PLANTS.

PHANEROGAMÆ.—DICOTYLEDONES.

RANUNCULACEÆ.

Ranunculus parviflorus, Linn., *β acutilobus.*

Ranunculus parviflorus, Linn., Sp. Pl., ed. 2, p. 780; *β acutilobus*, DC., Prodr., i. p. 42, fide R. T. Low in Herb. Kew.

St Helena.—Introduced? Wet places—*Burchell;* upland parts—*Hooker;* without locality—*Haughton.*

This widely dispersed plant is probably not truly indigenous, though it may have reached the island independently of the agency of man. Melliss does not include it in his enumeration; but he states that *Ranunculus sceleratus* is common. Roxburgh mentions *Ranunculus bulbosus*, which Melliss says is "grown in gardens only as a great rarity."

CRUCIFERÆ.

Senebiera heleniana, DC.

Senebiera heleniana, DC., Syst. Veg., ii. p. 523; Prodr., i. p. 202; Burchell, Ic. ined. t. 177.

St Helena.—Indigenous? In the sand near the lime quarry, Sandy Bay—*Burchell*, 124.

Allied to the common *Senebiera didyma*, and possibly only a modification of that species, which Melliss records as a troublesome weed. Burchell's specimens, however, the only ones we have seen, are almost woody, with the cauline leaves usually narrowly three-lobed, and have dark red or violet flowers, as represented in his coloured drawing; not white, as described by De Candolle. Melliss has not taken up the name.

["*Brassica heleniana*, Burch.," in DC. Prodr., i. p. 215, is certainly *Raphanus raphanistrum*. It is singular that the name should be ascribed to Burchell, because both in his MSS. enumeration of the plants of St Helena and on the label accompanying the specimens numbered 128, he has named the plant *Raphanus* sp.]

FRANKENIACEÆ.

Frankenia portulacæfolia, Spreng.

Frankenia portulacæfolia, Spreng., Syst. Veg., ii. p. 134; Hook., Ic. Pl., xi. t. 1058; Melliss, St Hel., p. 239, t. 25 (the dissections copied from Hooker).
Frankenia beatsonia, Schult. in Rœm. et Schult. Syst. Veg., vii. p. 70.
Beatsonia portulacæfolia, Roxb. in Beatson's St Helena Tracts, p. 300; DC., Prodr., i. p. 350.

St Helena.—Endemic. Rocks on Lot's Ridge—*Burchell*, 84; dry rocks—*Bennett;* Sandy Bay Barn—*Melliss;* without locality—*Morris*, in 1883.

"St Helena Tea."

"It still exists plentifully in the southern and eastern sides of the island, growing on the barren, dry, rocky ground near the sea-coast at altitudes of 500 to 1000 feet. It is most abundant at Sandy Bay Barn and near the Asses' Ears, and, excepting a few stray plants on the eastern side of the High Knoll, does not exist on the northern side of the island."—*Melliss.*

CARYOPHYLLACEÆ.

Polycarpon tetraphyllum, Linn.

Polycarpon tetraphyllum, Linn. f.; DC., Prodr., iii. p. 376; Oliver, Fl. Trop. Afr., i. p. 144.

St Helena.—Introduced? Common—*Burchell; Melliss; Lyall.*

Almost everywhere in temperate and subtropical regions where man has settled.

PORTULACEÆ.

Portulaca oleracea, Linn.

Portulaca oleracea, Linn., Sp. Pl., ed. 1, p. 445, et Amœn. Acad., vii. p. 505; Oliver, Fl. Trop. Afr., i. p. 148; Melliss, St Hel., p. 240.

St Helena.—Introduced? Common—*Roxburgh; Melliss.*

More widely diffused even than *Polycarpon tetraphyllum;* and Melliss expresses the opinion that it is indigenous in St Helena; but it is noteworthy that Burchell did not collect it. Plants of this class, that colonise so freely, must always occupy a doubtful position in relation to the indigenous element of the vegetation of a country. See remarks on this plant at p. 35 of this report.

STERCULIACEÆ.

Melhania melanoxylon, Ait.

Melhania melanoxylon, Ait., Hort. Kew, ed. 2, iv. p. 146; Melliss, St Hel., p. 245, t. 29.
Pentapetes erythroxylon, Bot. Mag., t. 1000, non Ait., Hort. Kew, ed. 1, ii. p. 438.
Dombeya erythroxylon, Andr., Bot. Rep., t. 389.
Dombeya melanoxylon, Roxb. in Beatson's St Helena Tracts, p. 307.
Trochetia melanoxylon, Benth. et Hook. f., Gen. Plant., i. p. 222.
Alcea arbor populnea, &c., Pluk., Almag. Mant., p. 6, et Amalth., t. 333, fig. 3.

St Helena.—Endemic. Barren rocks near the sea, and not far from Sandy Bay—*Roxburgh;* at Man and Horse and High Hill—*Burchell.*

"Native Ebony."

This tree appears to be quite extinct in the island, and probably no longer exists under cultivation. In Burchell's time it grew in the localities named above, and, according to his notes in Kew library, in a few others.

"This plant I believe to be now extinct. It formerly grew on the outer portions of the island near the coast, at altitudes of 1000 to 2000 feet, where the weatherbeaten stems are still found deeply embedded in the surface soil. The last plant I saw was a small one growing in the garden at Oakbank about twenty-five years ago, but it is not there now, and I have in vain searched the whole island over for another. The leaves were dark-green, and the flowers white; the wood is very hard, heavy, black in colour, and extremely brittle. It is still collected and turned into ornaments, which are much prized on account of its rarity. That this tree once formed a considerable portion of the vegetation, clothing the island on those parts that are now quite barren, is strongly evidenced by the many references to it in the local records."—*Melliss.*

Roxburgh mentions that he saw the ebony in two gardens only, where it had in many years grown to the height of only two or three feet, with many longer branches spreading flat on the ground, well decorated with abundance of foliage and large handsome flowers.

Melhania erythroxylon, Ait.

Melhania erythroxylon, Ait., Hort. Kew., ed. 2, iv. p. 146; Melliss, St Hel., p. 245, t. 28.
Pentapetes erythroxylon, Forst. in Comment. Soc. Gœtt., ix., reprint, p. 51; Ait., Hort. Kew, ed. 1, ii. p. 438.
Dombeya erythroxylon, Willd., Sp. Pl., iii. p. 725; Roxb. in Beatson's St Helena Tracts, p. 306.
Alcea arborea populi, &c., Pluk., Almag. Mant., p. 6, et Amalth., t. 333, fig. 1.
Trochetia erythroxylon, Benth. et. Hook. f., Gen. Plant., i. p. 222.

St Helena.—Endemic. Longwood—*Burchell; Shuter;* without locality—*Bennett; Haughton; Lefroy;* Central Range—*Morris*, in 1883.

"Redwood."

This beautiful tree must soon share the fate of its congener. Melliss says—"One or two specimens still remain growing amongst the cabbage-trees, ferns, and other native plants in the glens near Diana's Peak and High Peak at 2500 feet. It is, however, very quickly disappearing, and ere long will probably become altogether extinct. Some cultivated specimens exist in gardens as low down as 1850 feet; but altogether not more than seventeen or eighteen plants are now to be found in the island; namely, two at Arnos Vale, one at Oakbank, three or four at Bowers's and Sandy Bay, two at Sam. Alexander's, one at Southen's, six or eight young trees at the Hermitage, one at Diana's Peak, and one at High Peak." From Burchell's manuscript we learn that it must have been tolerably plentiful in 1810; and Roxburgh states that in 1814 it still furnished the islanders with a hard, close-grained, mahogany-coloured, durable wood.

GERANIACEÆ.

Pelargonium cotyledonis, L'Heritier.

Pelargonium cotyledonis, L'Heritier, Geraniol., t. 27; Ait., Hort. Kew., ed. 1, ii. p. 428; Willd., Sp. Pl., iii. p. 674; DC., Prodr., i. p. 655; Melliss, St Hel., p. 250, t. 30.
Geranium cotyledonis, Linn., Mant., p. 569; Andrews, Geran., *cum icone*.
Isopetalum cotyledonis, Sweet, Geran., t. 126.
Erodium sempervivum, Roxb. in Beatson's St Helena Tracts, p. 308.

St Helena.—Endemic. Cole's Rock—*Burchell*, 129.

"Old Father live for ever" is the name applied to this plant by the islanders, in consequence of its power of retaining vitality for months without soil or water.

It was introduced into this country by Mr John Bush in 1765, and was cultivated in several gardens for many years, flowering freely, in some places at least. In a wild state it very rarely flowers, a few flowers collected by Burchell being the only ones we have seen. "It is now very rare, but still to be found at altitudes of 50 to 1000 feet clinging to the barren, exposed, rocky cliffs overhanging the sea-coast on the windward side of the island, where there is least soil and moisture. The colour of its stem is a chocolate-brown, considerably mottled by the grey lichens growing upon it, and so nearly resembles the dark basaltic cliffs and soil upon which it is found, that at the time when the plant is leafless it is most difficult to distinguish it from the rock upon which it grows. It seems to seek out the most inaccessible places, where there is no other vegetation—indeed, where nothing else would grow; and not without some risk are plants of it to be obtained. It throws out its leaves and white blossoms about May and June, after the summer rains; these soon die away again, leaving the plant for the most part of the year very much like a knotted mass of old fir-tree roots. It is now chiefly found on Sandy Bay Barn and Man and Horse Cliffs; and the only places inland where it occurs, and that very rarely, are Cole's Rock, in Sandy Bay, and at the eastern side of High Knoll—altitude, 1875 feet."—*Melliss.*

Linnæus described this plant in 1771, probably from cultivated specimens, and recorded it from the Cape of Good Hope, adding, "*Non dum mihi floruit.*"

Oxalis corniculata, Linn.

Oxalis corniculata, Linn., Sp. Pl. ed. 1, p. 435; DC., Prodr., i. p. 692; Melliss, St Hel., p. 252.

St Helena.—Introduced? Abundant all over the island—*Burchell; Hooker; Melliss.*

This plant is now universally spread, excepting in the colder regions; and it is impossible to determine where its presence is due to natural, and where to accidental causes.

ZYGOPHYLLEÆ.

Tribulus terrestris, Linn.

Tribulus terrestris, Linn., Sp. Pl., ed. 1, p. 387; DC., Prodr., i. p. 703; Melliss, St Hel., p. 252.

St Helena.—Introduced? Uncommon in the island. Near the lime quarry at Sandy Bay—*Burchell*, 102; only one plant, Prosperous Bay—*Melliss*.

Almost certainly an introduced plant in St Helena, where it does not seem to spread; yet it is elsewhere nearly as widely and generally diffused as *Oxalis corniculata*. In his manuscript notes Burchell adds to his own locality, "between Great and Little Stone Top, Rox."

RHAMNEÆ.

Phylica ramosissima, DC.

Phylica ramosissima, DC., Prodr., ii. p. 34; Hook., Ic. Pl., xi. t. 1051; Melliss, St Hel., p. 256, t. 32.
Phylica rosmarinifolia, Roxb. in Beatson's St Helena Tracts, p. 316, *nec aliorum*.

St Helena.—Endemic. Longwood, Lot, &c.—*Burchell*, 81; without locality—*Walker*.

"Wild Rosemary."

Forty years ago this was not an uncommon plant; but it has now become quite rare, and Morris did not collect it in 1883, though it most likely still existed. Melliss records the following facts concerning this plant:—"I have not seen it either above or below the altitudes of 1500 to 2000 feet; it grows mostly at Fairy Land, Plantation, Rosemary Hall, Oaklands, Oakbank, and other places of similar position, but its most remarkable locality is on the top of the pile of rock called Lot, where about a dozen large bushes of it seem to thrive without any soil. This plant is gradually disappearing; perhaps not more than a hundred specimens now exist."

Nesiota elliptica, Hook. f.

Nesiota elliptica, Hook. f. in Benth. et Hook. Gen. Plant., i. p. 380, et in Hook. Ic., xi. t. 1052; Melliss, St Hel., p. 256, t. 31.
Phylica elliptica, Roxb. in Beatson's St Helena Tracts, p. 316; DC., Prodr., ii. p. 34.

St Helena.—Endemic. Diana's Peak—*Burchell*, 82; *Hooker; Melliss; Morris*, in 1883; without locality—*Walker*.

"Wild Olive."

"This handsome indigenous plant, known as the Wild Olive of Diana's Peak, growing amongst the ferns and other native vegetation on the north side of the Central Ridge, attains to a stout shrubby tree, about fifteen or eighteen feet high. Very few trees now remain, probably not more than twelve or fifteen at the most, and these grow chiefly on

the northern side of the Central Ridge, where it is easily recognised by its deep grey foliage, in contrast with the pale green which characterises the other indigenous plants. Altitude, 2500 to 2600 feet."—*Melliss.*

LEGUMINOSÆ.

Psoralea pinnata, Linn.

Psoralea pinnata, Linn., Sp. Pl., ed. 1, p. 762; Roxb. in Beatson's St Helena Tracts, p. 319; Harv. and Sond., Fl. Cap., ii. p. 144 (*varietates plures*).
Psoralea arborea, Sims, Bot. Mag., t. 2090; Melliss, St Hel., p. 261.

St Helena.—Indigenous? In the more humid hills—*Burchell*, 137; common at elevations of 1800 to 2000 feet—*Melliss.*

"Christmas or Gobble Gheer."

Very widely spread, and common in South Africa. Burchell and Roxburgh seem to have regarded this small tree as being indigenous to St Helena, and Melliss says—"Doubtless this plant existed in the island on its discovery;" yet he gives no reasons justifying such an assertion. It is far more likely that it was introduced from the Cape early in the history of the island, and producing seed freely, soon established itself. Considering how common it is in South Africa, it is probable that it is disrelished by animals, and if so this would account for its becoming common in St Helena. The European furze has spread over the island, and is one of the most abundant plants, yet nobody would question its being an alien. Forster (Comment. Gœtt., ix. p. 54) records the common South African *Psoralea aphylla*, Linn., from St Helena, with the remark that it was probably introduced.

FICOIDEÆ.

Mesembryanthemum cryptanthum, Hook. f.

Mesembryanthemum cryptanthum, Hook. f. in Hook. Ic. Pl., xi. t. 1034; Melliss, St Hel., p. 241, t. 26.

St Helena.—Endemic. Prosperous Bay Plain—*Burchell*, 115.

"It grows in the hottest parts in the most barren and arid rocky soil, near the sea, in the neighbourhood of Sandy Bay beach and Turk's Cap Bay; and it is to be met with generally on the southern and eastern outskirts of the island."—*Melliss.*

Pharnaceum acidum, Hook. f.

Pharnaceum acidum, Hook. f. in Hook. Ic. Pl., xi. t. 1035; Melliss, St Hel., p. 242, t. 27.

St Helena.—Endemic. Sandy Bay—*Burchell*, 113; *Melliss;* without locality—*Haughton.*

"Longwood Samphire," Burchell.

Melliss says—"The only plant I know of now in the island grows on the pathway from Sandy Bay Lines to Horse's Head."

UMBELLIFERÆ.

Sium burchellii, Hemsl. (Plate XLVIII. C, figs. 5–7).

Sium burchellii, Hemsl.

Lichtensteinia burchellii, Hook. f. in Hook. Ic. Pl., xi. t. 1033 (incorrect as to the fruit); Melliss, St Hel., p. 278, t. 33.

St Helena.—Endemic. Diana's Peak—*Burchell*, 92; near Taylor's Flat to the westward of Diana's Peak—*Melliss*.

"Dwarf Angelica."

After a careful comparison of all the materials accessible, we have no doubt that this was erroneously referred to the genus *Lichtensteinia*, and we strongly suspect that it is not specifically different from *Sium helenianum*, but merely a stunted condition of that plant; yet, as we have only young fruit of *Sium burchellii*, we cannot be sure. There seems to have been some confusion of the two forms and perhaps a third. The obvious divergences of the two forms, whatever their rank, are in stature and in the length and shape of the fruit. *Sium burchellii* grows only three to five feet high, and has a longer, narrower fruit, with prominent, corky juga; while *Sium helenianum* grows from eight to twelve feet high, and has a shorter, thicker fruit, with less corky and more angular juga. These differences may be due to habitat, for *Sium helenianum* is said to grow amongst the "Cabbage-trees" and ferns in the ravines that traverse the mountain sides of Diana's Peak; whereas *Sium burchellii*, according to Melliss, inhabits the southern precipitous sides of the high central ridge, and is now very rare. The fruit of *Sium burchellii*, taken from the type specimens, has no vittæ under or in the juga; and the number of vittæ in the valleys is usually two, but varies from one to three in different fruits, or different valleys of the same fruit; when there is only one it is relatively large. In *Sium helenianum* the number of vittæ in each valley seems to be constantly three. Other reasons why we think they are forms of one species are—our inability to sort the specimens into two species, and the fact that neither Roxburgh nor Burchell, both of whom were good botanists (and the latter spent five years in the island), recognised more than one species. Further, Melliss sent specimens to Kew, collected by Mr Chalmers[1] near Diana's Peak, with the note, "appears to be different from *Sium helenianum* and *Lichtensteinia burchellii*." This intermediate form strengthens the view that the original types of the two forms are merely states of the same species. Loose fruits sent by Mr Melliss as *Lichtensteinia burchellii* are exactly the same as loose fruits sent by him under the name of *Sium helenianum*, and both the same as typical fruit of the latter; so he, we may infer, was unable to distinguish the supposed species on the spot. On the other hand, Mr D. Morris, who visited the island in 1883, was of opinion that there were two distinct species, though we may add he collected only one. Melliss's 46 has the following note: "This is the plant that Burchell gathered. It grows on the Central Ridge,

[1] Mr John Chalmers was sent out in 1868 to establish the Cinchona plantations, which have been since abandoned.

near Taylor's Flat, not far from Diana's Peak, at an elevation of about 2500 feet, amongst 'Cabbage-trees' and ferns. It is shrubby and rare, and I have seen only one or two plants, whereas the *Sium* is very abundant." This specimen has a short stunted stem with relatively small crowded leaves and no flowers or fruit.

The leaf of *Sium helenianum* represented in Hooker's Icones Plantarum, t. 1032, behind the inflorescence, is the only one with relatively finely toothed margins to the segments. Two other specimens collected by Melliss, and regarded by him as *Sium helenianum*, are portions of stem, about two feet long, bearing at the top leaves with as coarsely toothed margins as any of those of *Sium burchellii*. The specimen referred to, collected by Mr Chalmers, is in flower, and is so exactly like *Sium helenianum*, as represented in the Icones Plantarum, except that the leaves are more coarsely toothed, as to be indistinguishable. Ripe fruit is still wanting of the dwarf half-shrubby form (*Sium burchellii*), of which the only specimens bearing either flowers or young fruit are those collected by Burchell himself.

Sium helenianum, Hook. f. (Plate XLVIII. A, B, figs. 1–4.)

Sium helenianum, Hook. f. in Hook. Ic. Pl., xi. t. 1032; Melliss, St Hel., p. 279, t. 34.
Angelica bracteata, Roxb. in Beatson's St Helena Tracts, p. 297; DC., Prodr., iv. p. 169.

St Helena.—Endemic. High Peak and Diana's Peak—*Melliss; Morris*, in 1883.

"Angelica" or "Jelico."

This is much commoner than the form which has been distinguished as a species, but which we now think may be only a form of this. See the remarks under *Sium burchellii*.

[Roxburgh includes the widely-spread *Hydrocotyle asiatica*, Linn., in his enumeration, but neither Burchell nor any subsequent collector has met with it.]

RUBIACEÆ.

Hedyotis arborea, Roxb.

Hedyotis arborea, Roxb. in Beatson's St Helena Tracts, p. 310; DC., Prodr., iv. p. 422; Hook., Ic. Pl., xi. t. 1031; Melliss, St Hel., p. 282, t. 35 (section of the fruit incorrect).

St Helena.—Endemic. Diana's Peak, 2000 to 3000 feet—*Hooker;* Sandy Bay Ridge—*Burchell*, 64; without locality—*Seemann*, 2650; near Diana's Peak—*Melliss*.

"Dogwood."

Roxburgh, who first described this tree, about 1813, records it as "a native of the dark forests which decorate the misty alpine tops of the most lofty mountains in St Helena." Melliss states that it takes about the fifth place among the endemic plants for abundance, growing about twenty feet high on the high central ridge from Diana's Peak to High Peak, at an elevation of 2700 feet.

There are specimens in the British Museum Herbarium collected by J. Lind, M.D.

COMPOSITÆ.

In consequence of different botanists having employed the same specific names for two or more diverse plants, the synonymy of the St Helena *Compositæ* has been involved in great confusion, and therefore it may be useful to publish Burchell's manuscript tabulation of the synonymy deduced from a comparison of his unrivalled collection with the older collections in the British Museum. It will be seen from a comparison with our final synonymy that De Candolle mistook one or two of the plants which had previously been described under other names. Another cause of confusion was the transposition by Burchell himself of his numbers 154 and 157. That he did so is evident from the numbers attached to his specimens, and the names and numbers on his drawings of the two plants in the Kew Herbarium Library. With the exception of this emendation we print Burchell's manuscript verbatim, adding in brackets the names adopted in this work.

"*Compositæ arborescentes Insulæ Stæ Helenæ.*—Compared with those in Lambert's Herbarium, 4. v. '33. Compared with Forster's and Banks's and Roxburgh's plants at the British Museum, 9. v. '33.

152. Gumwood. *Commidendron vulgare*, B. [Commidendron robustum, DC.]
'*Conyza arbor helenioides*, Plukenet, t. 345, fig. 7, *salvifolia*.'
Conyza salvifolia, Solander MS. in Herb. Banks.
Conyza gummifera et *Conyza robusta*, Roxb. Cat.
Conyza gummifera, Herb. Lamb. et Brit. Mus.
Conyza robusta, Roxb. ex DC.
Commidendron gummiferum, DC., Prodr., v. p. 344.

153. Scrubwood. . . . [Commidendron rugosum, DC.]
Conyza rugosa, Hort. Kew, ed. 1 (certe), ex speciminibus Kewensibus in Herb. Banks. asservatis.
Aster glutinosus, Roxb. Cat.; Herb. Lamb.; Plukenet, tab. 345, fig. 6, ubi pedunculus perperam ramosus depingitur.
Commidendron rugosum, DC., Prodr., v. p. 345.

154. . . . *cymosa*, B. [Commidendron spurium, DC.]
Solidago spuria, Forster, secundum iconem manu ejus depictam in Mus. Brit., cui addidit etiam nomen Aster olus.
Solidago spuria in specimine Forsteriano (ex Herb. Pallasii), autographo in Herb. Lam., ut etiam Aster olus.
Solidago spuria, Roxb. Cat., sec. descript.
Cacalia fraterna, Solander MS. in Herb. Banks.
Commidendron spurium, DC., Prodr., v. p. 344.

155. Bastard Cabbage-tree. [Melanodendron integrifolium, DC.]
Solidago integrifolia, sec. Herb. Lamb.
Melanodendron integrifolium, DC., Prodr., v. p. 280.

156. Red Cabbage-tree. . . . *prenanthiflora*, B. [Senecio prenanthiflora, Benth. et Hook. f.]
Cacalia spuria, } Solander MS. in Herb. Banks. *Cacalia spuria* is only a slight variety.
Cacalia materna, }
Mikania arborea, Roxb. Cat., sec. descript. ex DC.
Lachanodes prenanthiflora, DC., Prodr., v. p. 443.

157. White Cabbage-tree. [Senecio leucadendron, Benth. et Hook. f.]
Aster leucadendron, Forster in Herb. Lamb.
Solidago leucadendron (in ink) } Forster's drawings in Brit. Mus. in pencil, and a bad repre-
Aster pseudogummi (in pencil) } sentation.
Solidago leucadendron, Roxb. Cat. ex descript.
Lachanodes leucadendron, DC., Prodr., vi. p. 443.
158. . . . . *conferta*, B. [Commidendron spurium, DC.]
Solidago cuneifolia, Roxb. sec. Herb. Lamb., where specimens of 157 [154] are under the same name.
Solidago gummifera, Roxb. ex DC.

[The last is a mistake, at any rate as to the Prodromus, where *Solidago cuneifolia* is doubtfully referred to *Lachanodes*.]

159. . . . *vernicata*, B. [Psiadia rotundifolia, Hook. f.]
Conyza glutinosa, Solander MS. in Herb. Banks.
Conyza rotundifolia, Roxb. sec. descript. in catal.
Commidendron rotundifolium, DC., Prodr., v. p. 344.
160. *Drimyphyllum helenianum*, B. [Petrobium arboreum, R. Br.]
Laxmannia arborea, Forster in Herb. Forst. in Mus. Brit.
Bidens arborea, Roxb. Cat. (planta fœm.)
Spilanthes tetrandra, Roxb. Cat. (planta mas.)
Petrobium, R. Br. in Trans. Linn. Soc., et DC."

—*W. J. Burchell*, MSS. in Bibl. Kew.

Commidendron burchellii, Benth. et Hook. f.

Commidendron burchellii, Benth. et Hook. f., Gen. Plant., ii. p. 277.
Aster burchellii, Hook. f. in Hook. Ic. Pl., xi. p. 44; Melliss, St Hel., p. 283, t. 36.

St Helena.—Endemic. Longwood—*Burchell*, 152, in part; near High Peak, at an elevation of 2500 feet—*Melliss*; without locality—*Wollaston*; Thompson's Wood—*Morris*, in 1883.

"Gum-tree."

Very rare, and almost extinct. Mellis found only one small tree of this species, and he believed it was the only one in existence. It was growing in a clump of *Commidendron gummiferus*, near the Old Picquet House, above West Lodge.

Commidendron spurium, DC.

Commidendron spurium, DC., Prodr., v. p. 344, sed non *Solidago spuria*, Forst., nec *Conyza arborescens*, Willd.
Aster gummiferus, Hook. f. in Hook. Ic. Pl., xi. t. 1056, cum var. β, non *Conyza gummifera*, Roxb., nec *Commidendron gummiferum*, DC.; Melliss, St Hel., p. 284, t. 38.
Solidago cuneifolia, Roxb. in Beatson's St Helena Tracts, p. 324.
Lachanodes cuneifolia, DC., Prodr., vi. p. 443.

St Helena.—Endemic. Thompson's Wood Hill—*Burchell*, 158; from the ridge above West Lodge—*Burchell*, 157; Central Peak, at High Peak, at 2700 feet—*Melliss*; Thompson's Wood—*Morris*, in 1883.

"Little Bastard Gumwood."

Very rare indeed according to Melliss, growing only at High Peak, and near the Old Picquet House, above West Lodge. In the British Museum are specimens collected by Forster and Robertson, 1773.

By an oversight the name *gummiferus* was applied to this plant in Hooker's Icones Plantarum. The error seems to have originated with Burchell, who incorrectly, in his manuscript tabulation of the synonymy of the St Helena *Compositæ*, reproduced at p. 70, cites De Candolle as reducing *Solidago cuneifolia*, Roxb., to *Solidago gummifera*, Roxb., whereas he doubtfully referred it to the genus *Lachanodes*.

Commidendron robustum, DC.

Commidendron robustum, DC., Prodr., v. p. 344; Melliss, St Hel., p. 284, t. 39.
Commidendron gummiferum, DC., *loc. cit.*
Aster roxburghii, Hook. f. in Hook. Ic. Pl., xi. p. 45.
Conyza robusta et *Conyza gummifera*, Roxb. in Beatson's St Helena Tracts, p. 304.

St Helena.—Endemic. Longwood—*Burchell*, 152; *Lady Dalhousie;* without locality—*Walker; Wollaston; Melliss.*

"Gumwood."

Melliss estimated the total number of gumwood trees in the island, in 1868, at about 1300 or 1400, and gave the approximate number in each locality where they grew. The principal are:—Longwood, Deadwood, and Lowe's Gardens, about 700 or 800; Man and Horse, about 50; Thompson's Wood, about 50; valley next to Shipway's, about 60; valley next to Rock Rose Hill, about 100; valley between Rock Mount and Peak Dale, about 100; and valley between Peak Dale and Lufkins, about 100. Formerly this was the most abundant tree in the island, and covered large areas. Roxburgh states that it grew on the more elevated parts of the interior of the island; but Melliss says it does not occur at a greater elevation than 1900 feet. We append his remarks on the distribution of this tree:—"The gumwood does not grow on the central and most elevated land where the native cabbage-trees and inhabitants of the cooler regions are found. Scarcely a tree exists at a greater altitude than 1900 feet above the sea; and there is still sufficient evidence to show that its habitat was on the now semi-barren slopes which stretch away to the sea-coast, and encircle the middle zone of the island—such as Longwood, Deadwood, Man and Horse, New Ground, and similar localities. Longwood and Deadwood, as their names imply, were originally covered with trees; nor is this the only evidence of their having been abundantly wooded, for natives still living on the island, as well as the records, tell of thick woods once covering those now grassy plains. Knowing this to be the case, there is no reason to doubt that other parts of the island, which now appear barren and so unlikely to support vegetation, were once also, down to the sea-cliffs, clothed with green woods, as stated by early visitors to the island."

Commidendron rugosum, DC.

Commidendron rugosum, DC., Prodr., v. p. 345.
Aster glutinosus, Roxb. in Beatson's St Helena Tracts, p. 300; Hook., Ic. Pl., xi. t. 1057; Melliss, St Hel. p. 283, t. 37. (*Aster rugosus* in tab.)
Conyza rugosa, Ait., Hort. Kew, ed. 1, iii. p. 184, non Vahl, et ed. 2, v. p. 30, excl. syn.

St Helena.—Endemic. Longwood—*Burchell*, 153; without locality—*Bennett; Haughton;* barren, rocky places—*Melliss;* St Helena Barn—*Morris*, in 1883.

"Scrubwood."

There are also specimens in the British Museum collected by Masson and Staunton.

Burchell states that the largest and most ancient trees were about Little Stonetop, and they were ten or more feet high.

The statement in Hooker's Icones Plantarum, xi. p. 45, and repeated in Melliss's St Helena, "also very rare in Ascension, Burchell MSS.," was copied from a note in Burchell's handwriting on the back of a drawing of the plant in the Herbarium library at Kew; and further particulars concerning it are given in our enumeration of the plants of Ascension.

Melanodendron integrifolium, DC.

Melanodendron integrifolium, DC., Prodr., v. p. 280; Hook., Ic. Pl., xi. p. 34, t. 1045; Melliss, St Hel., p. 286, t. 40.
Solidago integrifolia, Roxb. in Beatson's St Helena Tracts, p. 323.

St Helena.—Endemic. Diana's Peak and Sandy Bay Ridge—*Burchell*, 155; *Hooker*, 284; without special locality—*Walker; Bennett; Melliss.*

"Black Cabbage-tree."

At the present time this is the most abundant of all the native arboreous *Compositæ*.

Psiadia rotundifolia, Hook. f.

Psiadia rotundifolia, Hook. f. in Benth. et Hook. Gen. Plant., ii. p. 285; Melliss, St Hel., p. 286, t. 41.
Commidendron rotundifolium, DC., Prodr., v. p. 344.
Solidago rotundifolia, Roxb. in Beatson's St Helena Tracts, p. 324.

St Helena.—Endemic. Longwood—*Burchell*, 159; *Melliss; Morris*, in 1883.

"Bastard Gumwood" or "Cabbage-tree."

All the specimens we have seen are from the same locality. According to Melliss, only one tree of this species is now known to exist, and that grows in a field to the left of the entrance gates at Longwood called the Black Field. It is a tree about twenty feet high, and apparently very old. Burchell collected his specimens in 1806, and from his manuscript notes we learn that the largest and oldest trees then in existence were in "Shark's Valley, below Julio's." More writers than one, whom we quote in various

places, allude to the great fertility of the native plants in the production of seed, which grows freely where it is not choked by other plants. As an instance, it may be recorded here that the last tree of *Psiadia rotundifolia* bears good seed in plenty; and it is satisfactory to know that some brought home by Mr Morris in 1883 have germinated at Kew. It is to be hoped that success will attend the efforts to raise them, so that this interesting tree may be represented in botanic gardens, at least, for some years to come. With few exceptions, however, the plants of St Helena seem difficult to cultivate, for they languish under artificial conditions and die young.

Petrobium arboreum, R. Br.

Petrobium arboreum, R. Br. in Trans. Linn. Soc. Lond., xii. p. 113; DC., Prodr., v. p. 502; Hook., Ic. Pl., xi. p. 40, t. 1053; Melliss, St Hel., p. 287, t. 42.
Bidens arborea (fœm.), et *Spilanthes tetrandra* (mas.), Roxb. in Beatson's St Helena Tracts, pp. 301 et 325.
Spilanthus arboreus, Forst. in Comment. Soc. Gœtt., ix. p. 56.
Laxmannia arborea, Forst., Char. Gen. Pl., t. 47.

St Helena.—Endemic. Harding Spring—*Burchell*, 160; Central Ridge, at 2000 to 2600 feet—*Melliss;* without special localities—*Hooker; Cuming; Shuter; Bennett; Seemann;* and *Banks, Forster*, and *Robertson* in the British Museum Herbarium.

"Whitewood Cabbage-tree."

"One of the most abundant of the indigenous plants still remaining. It grows now chiefly on the south side of the high Central Ridge, extending from Diana's Peak to High Peak, at about 2600 feet."—*Melliss.*

Cotula coronopifolia, Linn.

Cotula coronopifolia, Linn.; Hook. f., Handb. Fl. N. Zeal., p. 141; Benth., Fl. Austr., iii. p. 549; Roxb. in Beatson's St Helena Tracts, p. 305; Melliss, St Hel., p. 288; Buchenau in Bot. Zeit. 1862, p. 25.

St Helena.—Indigenous? Ladder Hill, in the valleys about Sandy Bay, in Rupert's Valley, &c.—*Burchell*, 147; *Haughton.*

This plant is very widely spread in the southern hemisphere; also in Europe and North Africa, where, however, it it certainly a colonist.

Melliss states that it grows over the rocky outskirts of the island, and expresses the opinion that it existed in the island previous to its discovery; but the fact that another species (*Cotula australis*) has reached the island since Burchell's time, and become even commoner than the former, and at greater elevations, does not support this opinion.

Cotula coronopifolia is the "Pagoda flower" of the islanders; so named, Melliss says, from the resemblance of its flower-heads to a small gold coin, called a pagoda, of the value of four shillings, and current during the tenure of the East India Company.

Senecio prenanthiflora, Benth. et Hook. f.

Senecio prenanthiflora, Benth. et Hook. f., Gen. Plant., ii. p. 448.
Lachanodes prenanthiflora, Burch. in DC. Prodr., vi. p. 442; Hook., Ic. Pl., xi. t. 1054; Melliss, St Hel., p. 289, t. 43.
Mikania arborea, Roxb. in Beatson's St Helena Tracts, p. 313, non Kunth.
Solidago leucadendron, Willd., Sp. Pl., iii. p. 2054, non Forst.

St Helena.—Endemic. Half way up Diana's Peak and Sandy Bay Ridge—*Burchell*, 156; north slope of Diana's Peak, at 2500 feet—*Hooker*, 282; without locality—*Bennett*; Central Ridge—*Morris*, in 1883.

"She Cabbage-tree."

This still occurs rather plentifully on the Central Ridge at 2000 to 2600 feet. There are specimens in the herbarium of the British Museum brought home by Cook on his first voyage.

Senecio leucadendron, Benth. et Hook. f.

Senecio leucadendron, Benth. et Hook. f., Gen. Plant., ii. p. 448.
Pladaroxylon leucadendron, Hook. f. in Hook. Ic. Pl., xi. t. 1055; Melliss, St Hel., p. 289, t. 44.
Lachanodes leucadendron, DC., Prodr., vi. p. 443.
Solidago leucadendron, Forst., Comment. Soc. Gœtt., p. 59, ex Willd., Sp. Pl., iii. p. 2054; Roxb. in Beatson's St Helena Tracts, p. 323.

St Helena.—Endemic. Diana's Peak and Sandy Bay Ridge—*Burchell*, 154; Diana's Peak, at 2000 feet—*Hooker*; Central Ridge—*Melliss*; without locality—*Bennett*; Central Ridge—*Morris*, in 1883.

"He Cabbage-tree."

This forms, according to Melliss, a conspicuous part of the indigenous vegetation on the Central Ridge, growing at elevations of 1900 to 2600 feet, descending much lower than any of the other "cabbage-trees."

It is in the older collections at the British Museum, collected by Forster, Robertson (1773), and Staunton.

Tripteris burchellii, Hook. f.

Tripteris burchellii, Hook. f. in Melliss's St Hel., p. 290, t. 45.
Oligocarpus, Benth. et Hook. f., Gen. Plant., ii. p. 455.
Osteospermum, sp., Hook. f., Lecture on Insular Floras, reprint, p. 7.

St Helena.—Endemic. From the Waterfall, and the Gut under Lot's Wife, towards Sandy Bay—*Burchell*, 149; *Melliss*.

"A native of the rocky, barren land near the coast, where it grows with *Mesembryanthemum cryptanthum*. It springs up after the winter rains in July or August, blossoms and seeds freely, and dies in the following summer weather, about February or March. It is not abundant, and grows chiefly in the neighbourhood of Sandy Bay beach. I have

also gathered it near Flagstaff and Turk's Cap Valley, on the eastern side of the island, growing amongst the scrubwood bushes, and also on the cliffs at Wild Ram's Spring, about 1800 feet perpendicularly above the sea."—*Melliss.*

With the exception of one species north of the tropic and this Helenian species, the genus *Tripteris*, consisting of about twenty-five other species, is confined to South Africa.

CAMPANULACEÆ.

Lobelia scævolæfolia, Roxb.

Lobelia scævolæfolia, Roxb. in Beatson's St Helena Tracts, p. 312; DC., Prodr., vii. p. 357; Melliss, St Hel., p. 292, t. 46.
Trimeris oblongifolia, Presl. Prodr. Monogr. Lobel., p. 46.

St Helena.—Endemic. Diana's Peak and Sandy Bay Ridge—*Burchell*, 70; Diana's Peak, at 2000 feet—*Hooker;* Central Ridge, near Diana's Peak, at 2700 feet—*Melliss;* without exact locality—*Seemann; Shuter; Bennett; Wight; Cuming; Lady Dalhousie;* Diana's Peak—*Morris*, in 1883.

This still grows rather abundantly on the Central Ridge.

Wahlenbergia angustifolia, A. DC.

Wahlenbergia angustifolia, A. DC., Monogr. Camp., p. 162, et Prodr., vii. p. 438; Melliss, St Hel., p. 293, t. 47.
Wahlenbergia clivosa, A. DC., Monogr. Camp., p. 161.
Roella angustifolia, Roxb. in Beatson's St Helena Tracts, p. 320.

St Helena.—Endemic. High Peak, &c.—*Burchell*, 67; Diana's Peak, in stony places, at 2000 feet—*Hooker;* without locality—*Cuming; Lady Dalhousie; Bennett;* Central Ridge—*Melliss; Morris*, in 1883.

Melliss records this as rare on somewhat rocky banks along the Central Ridge, at 2000 to 2500 feet.

Wahlenbergia linifolia, A. DC.

Wahlenbergia linifolia, A. DC., Monogr. Camp., p. 162, et Prodr., vii. p. 438; Melliss, St Hel., p. 293, t. 48.
Roella linifolia, Roxb. in Beatson's St Helena Tracts, p. 321.
Wahlenbergia foliosa, A. DC., Monogr. Camp., p. 160, t. 14.

St Helena.—Endemic? Sandy Bay Ridge and Diana's Peak—*Burchell*, 68; Diana's Peak, at 2700 feet, common—*Hooker; Melliss; Morris*, 1883; without locality—*Seemann; Lesson; Cuming; Walker; Lady Dalhousie.*

Also recorded by De Candolle from Ascension, in Herb. Merat.

"Found at Diana's Peak, as well as generally and abundantly on the Central Ridge, amidst ferns and other indigenous plants, at altitudes of 2000 to 2500 feet."—*Melliss.*

There seems to be some confusion of the synonymy of this species and *Wahhlenbergia angustifolia*, to which A. De Candolle reduces his *Wahlenbergia clivosa*. In Kew Herbarium there is a specimen of undoubted *Wahlenbergia linifolia*, which was originally erroneously named *Wahlenbergia angustifolia*, and this specimen also bears the name "*Campanula clivosa*, herb. Banks," in A. De Candolle's own handwriting. On *Campanula clivosa*, herb. Banks non herb. Roxb., De Candolle founded his *Wahlenbergia clivosa*, which in the Prodromus he reduces to *Wahlenbergia angustifolia;* and *Campanula clivosa*, herb. Roxb. non herb. Banks, is cited as synonymous with *Wahlenbergia linifolia*.

Wahlenbergia roxburghii, A. DC.

Wahlenbergia roxburghii, A. DC., Monogr. Camp., p. 162; Prodr., vii. p. 438.
Roella paniculata, Roxb. in Beatson's St Helena Tracts, p. 320.

St Helena.—Endemic. Sandy Bay Ridge—*Burchell*, 69; without locality—*Walker; Melliss.*

Melliss omits *Wahlenbergia roxburghii*, and cites *Roella paniculata* as a synonym of *Wahlenbergia burchellii*. He may have intended to reduce the latter, for they are very much alike, if not the same species, and both Roxburgh and Burchell recognised only three species of this genus; but if they represent the same species, the name to retain is *Wahlenbergia roxburghii*.

Wahlenbergia burchellii, A. DC.

Wahlenbergia burchellii, A. DC., Prodr., vii. p. 438; Melliss, St Hel., p. 293, t. 49, excl. syn.

St Helena.—Endemic. Without number and locality—*Burchell; Walker; Wollaston;* near Taylor's Flat and Diana's Peak—*Melliss.*

"Rare in similar situations to *Wahlenbergia linifolia.*"—*Melliss.*

PLANTAGINACEÆ.

Plantago robusta, Roxb.

Plantago robusta, Roxb. in Beatson's St Helena Tracts, p. 317; DC., Prodr., xiii. 1, p. 736; Melliss, St Hel., p. 296, t. 50.

St Helena.—Endemic. From the Waterfall—*Burchell*, 63; Wild Ram's Spring—*Melliss.*

"Now very scarce, but still to be found growing in crevices of rocks in the hottest parts of the island, at Wild Ram's Spring, Man and Horse, &c., on the south-western sea-coast cliffs, on the eastern side of High Knoll, and at the Waterfall; also at the Flagstaff Hill."—*Melliss.*

SOLANACEÆ.

Mellissia begonifolia, Hook f.

Mellissia begonifolia, Hook. f. in Hook. Ic. Pl., xi. t. 1021; Melliss, St Hel., p. 307, t. 51.
Physalis begonifolia, Roxb. in Beatson's St Helena Tracts, p. 317.

St Helena.—Endemic. Long Range Point—*Burchell*, 80; without locality—*Bennett;* Long Range, &c.—*Melliss.*

"Boxwood."

"An extremely rare plant, but still to be found growing on the south-eastern side of the island at Long Range and Stone Top."—*Melliss.*

Solanum, sp.

Solanum, sp. (aff. *Solano villoso*, Lam.)

St Helena.—Introduced? About Sandy Bay—*Burchell*, 78.

The specimen of this is insufficient for determination; it is not *Solanum nigrum*, and we have not been able to match it. We may add Burchell's description, drawn up from the living plant:—

"*Habitus Solani nigri. Caulis* erectus, ramosus; ramuli angulati, patuli, pubescentes. Folia ovata, acuta, lateribus angulatis vel grosse dentatis, crassiuscula, utrinque breviter hirsuta, venosa, alterna, patentia, in petiolum attenuata, flavescenti-viridia. *Cyma* extra-foliacea sub–4-flora, pedunculata, foliis brevior. *Flores* nutantes, minuti; calyx florifer ovatus, 5-dentatus; fructifer 5-fidus, laciniis brevibus obtusis, a bacca recedentibus. *Pedunculi* fructiferi dependentes. *Bacca* pisi magnitudine, pallide viridis, bilocularis; seminum receptaculum centrale, simplex; semina parva, pallida, compressa, simplici serie in orbem radiatim disposita."—Burchell MSS. in Bibl. Kew.

BORAGINEÆ.

Heliotropium pannifolium, Burchell.

Heliotropium pannifolium, Burchell MSS. in Bibl. Kew, n. sp.

"*Planta* fruticosa, 3-pedalis, multicaulis, foliosa, incana, in omnibus partibus villosa. *Caules* ramosi, foliosi, lignosi, cortice fusco. *Ramuli* dense villosi, teretes, foliosi, intus medulla farcti. *Folia* alterna, petiolata, oblonga, $1\frac{3}{4}$ poll. lata, $4\frac{1}{2}$ poll. longa, obtusa, basi cordata, superne reticulato-venosa, venis depressis, inferne reticulato venosa, venis prominentibus, utrinque molliter incano-pubescentia, patentia, recurvata, undulata, integerrima, crassiuscula et minime succulenta; petiolus validus, superne complanatus, stipulæ nullæ. *Cyma* pedunculata, terminalis, foliorum longitudine. *Flores* sessiles, parvi; calyx inferus, utrinque hirsutus, tubulosus, semi-quinquefidus, laciniis erectis obtusis oblongis tubum

corollæ æquantibus; corolla hypocrateriformis, fauce nudo, tubo extus hirsuto; antheræ quinque, oblongæ, in tubi fauce sessiles, inclusæ. *Pistillum* unicum, inclusum; stylus brevis; stigma capitatum, cum acumine bifido; germina quatuor."

"Obs. Facies potius *Tournefortiæ* quam *Heliotropii* sed ob germina quatuor ad posteriorem generum relata."

St Helena.—Endemic. "Sandy Bay, in convalle Broadgut dicta, rarissima"—*Burchell*, 65.

As Burchell states, this plant has much more the appearance of a *Tournefortia* than a *Heliotropium*, but although the flowers of the only specimen in Kew Herbarium are almost wholly destroyed by insects, we have been able to confirm his description of the ovary. There is a figure of the plant among Burchell's unpublished drawings at Kew.

It would seem to be one of the endemic plants that have become extinct, yet no description of it has previously been published.

CONVOLVULACEÆ.

Dichondra repens, Forst.

Dichondra repens, Forst., Char. Gener., p. 40, t. 20; Melliss, St Hel., p. 305; DC., Prodr., ix. p. 451.

St Helena.—Indigenous? Little Stonetop, &c.—*Burchell*, 90; common everywhere—*Melliss*.

One of the most universally spread plants in tropical and subtropical regions, and also in some temperate countries. From Burchell's manuscript we learn that this plant was common in the interior of the island during his time, and Melliss expresses an opinion that it is probably a native.

Ipomœa biloba, Forsk.

Ipomœa biloba, Forsk., Fl. Ægypt.-Arab., p. 44; Hook. f., Fl. Brit. Ind., iv. p. 212.
Ipomœa pes-caprœ, Sweet, Hort. Suburb. Londin., p. 35; Mart., Fl. Bras., vii. p. 256.
Convolvulus pes-caprœ, et *Convolvulus brasiliensis*, Linn., Sp. Pl., ed. 1, p. 159; Roxb. in Beatson's St Helena Tracts, p. 304; Melliss, St Hel., p. 304.
Ipomœa maritima, R. Br., Prodr., Fl. Nov. Holl., p. 486; Bot. Reg., t. 319.

St Helena.—Indigenous. Without special locality—*Roxburgh*; Sandy Bay—*Burchell*, 66[2].

"Sea-bean."

Almost everywhere on tropical and subtropical sea-shores, and also penetrating far inland in some countries. Melliss takes up the name *Convolvulus brasiliensis*, from Roxburgh, but he does not appear to have met with the plant, which is rather singular, because it is one of those plants which are not easily displaced when they once obtain a footing.

We have expressed an opinion in another part of this work that the seeds of *Ipomœa biloba*, or *pes-capræ* as it is more commonly called, are carried by the waves of the sea from one place to another, and often germinate when cast ashore; and we find this opinion supported by a memorandum in Burchell's manuscript. It runs thus: "*Statio: In littore, ventum versus, Sandy Bay, ubi sæpe inveniuntur semina Acaciæ scandentis et Dolichos. Semina super undas longe feruntur, ab aqua marina nullium detrimenti, et variis in littoribus hospitaliter recipientia: planta hæcce vere nautica.*"

The "*Acacia scandens*" mentioned by Burchell is more familiarly known under its modern appellation, *Entada scandens*. It is widely dispersed in tropical countries, and its seeds are surpassed by few in size. Among other places, they are frequently thrown up on the Azores, where, however, the conditions are not favourable to their germination, though they retain their vitality, as has been proved by plants having been reared in the hothouses at Kew from seeds picked up on the shores of the Azores. From the direction of the prevailing oceanic currents, it is evident that these seeds are carried from the West Indies to the Azores, a distance of about 3000 miles.

Burchell does not say whether the seeds of *Entada scandens* ever begin to germinate on the coast of St Helena; it is obvious, however, that this plant could not establish itself there. Melliss states that the seeds are often cast ashore on the windward side of the island, and that they have been known to germinate and grow into plants of considerable size; yet he doubted the existence of a single plant in the island at the time he wrote. He also mentions that the hard slate-coloured seeds of *Guilandina bonduc* are frequently washed ashore on the beach at Sandy Bay, the same locality given by Burchell, though no instance of their having germinated had come under his observation.

NYCTAGINEÆ.

Boerhaavia verticillata, Poir.

Boerhaavia verticillata, Poir. in Lam. Encycl., v. p. 56; DC., Prodr., xiii. 2, p. 454; Melliss, St Hel., p. 312.
Boerhaavia repanda, Roxb. in Beatson's St Helena Tracts, p. 302, non Willd.
Boerhaavia helenæ, Rœm. et Schult., Syst. Veg., i. Mant., p. 73.

St Helena.—Indigenous? Ladder Hill, and various other localities—*Burchell*, 1; Rupert's Hill, &c.—*Melliss*.

"Hogweed."

This plant is widely diffused in Tropical Africa, and Melliss thinks it is probably indigenous in St Helena; but it is more likely to be an introduced plant, because all the known indigenous plants have a peculiar facies. It would seem, however, to have been commoner in Roxburgh's time than it is now, for he says "common amongst the rocks in James's Valley, &c."

CHENOPODIACEÆ.

Suæda fruticosa, Forsk.

Suæda fruticosa, Forsk., Fl. Ægypt.-Arab., p. 70; DC., Prodr., xiii. 2, p. 156.
Salsola fruticosa, Linn., Sp. Pl., ed. 2, p. 324.
Salsola salsa, Roxb. in Beatson's St Helena Tracts, p. 322.
Schoberia salsa, Melliss, St Hel., p. 314.

St Helena.—Indigenous. In the driest and most sterile hills of the coast—*Burchell*, 89. There is also a specimen in Kew Herbarium from St Helena without the collector's name.

Common on the eastern coasts of the Atlantic, the Mediterranean, and the salt marshes of Western Asia.

This is the "Samphire Bush" of the islanders, which Roxburgh records as common over the most barren parts of the island; and Melliss states that it is very common all over the rocky parts near the sea-coast, and in some of the deeply cut ravines, especially in Fisher's Valley, large tracts are covered with it to the exclusion of everything else.

Chenopodium, spp.

Chenopodium, spp.

St Helena.—Introduced? In that part of Longwood nearest the sea, abundant—*Burchell*, 85 and 86.

These specimens are in such an advanced state that we are unable to identify them, but we suspect that they are introduced, and probably varieties of *Chenopodium murale*.

Both specimens are half-woody, and Burchell describes 85 as "*species viridis*," while of 86 he says:—"*Planta annua sesquipedalis, tota coccinea etiam radix interne.*"

Exomis axyrioides, Fenzl.

Exomis axyrioides, Fenzl. in Mog. Chenop. Enum., p. 49, et in DC. Prodr., xiii. 2, p. 89.

St Helena.—Indigenous? On the rocky ground about Lot's Wife, Castle Rock, &c.—*Gillespie; Melliss.*

A native of South Africa.

EUPHORBIACEÆ.

Acalypha rubra, Roxb. (Plate XLIX.)

Acalypha rubra, Roxb. in Beatson's St Helena Tracts, p. 295.
Acalypha reticulata, var. *a rubra*, Müll. Arg. in DC. Prodr., xv. 2, p. 851; Melliss, St Hel., p. 318, t. 52.

St Helena.—Endemic. From Plantation House, gathered by Mr Hardwicke—*Burchell*, 165; without locality—*Bennett; Walker;* given to me from the upland southward part of the island—*Hooker.*

There is also a specimen in Kew Herbarium from the collections of the late General Sabine, given by Mr R. H. Scott, F.R.S.

"Stringwood."

This elegant and graceful miniature tree is believed to be quite extinct now. Roxburgh states that it grew on the elevated parts of the south face of Diana's Peak; Burchell, in his manuscript notes, gives a locality in a woody hollow near the Round Tower; and Melliss has the following note:—"The last plant I saw of it in the island was one that had been transplanted to Oakbank about twenty years ago. It grew to a small tree about eighteen inches high, and blossomed and seeded freely, but is no longer there."

We cannot follow Müller in regarding it as a variety of the Mauritian *Acalypha reticulata;* and in all probability he would not have reduced it to that species had he seen as complete specimens as we have. He says:—"Primo intuitu ob folia ambitu latiuscula, late subrhombeo-ovata et ob partem basilarem nudam spicarum $1\frac{1}{2}$–2 cm., longam specifice diversa videtur, sed nullo charactere firmo distingui potest." In the first place, it is readily distinguished by its general appearance; then the very differently shaped leaves are thicker in texture, and have long red petioles and red veins; and the seed-vessel is quite destitute of the prickles so prominent on the upper back part of the carpels of the seed-vessel of *Acalypha reticulata*. The bracts, too, of the female flowers are much larger; and the pendent male spikes in well-developed specimens are eight or nine inches long. Roxburgh describes it in the following words:—"A beautiful small tree, a native of elevated parts of the south face of Diana's Peak, and called String-tree by the natives on account of its numerous beautiful red male spikes, which hang in great profusion from every twig. Ultimate branches tubercled with the scars of the fallen leaves; above, where the leaves remain, coloured and smooth, the petioles, nerves, and veins are also red and smooth."

Euphorbia chamæsyce, Linn. ?

Euphorbia chamæsyce, Linn. ? var. (vel species nova ?)
Euphorbia rosea, Roxb. in Beatson's St Helena Tracts, p. 308; Melliss, St Hel., p. 319, non Retz.
Euphorbia prostrata, Burchell MSS. vix Ait.

St Helena.—Indigenous? In dry mountains near the sea—*Burchell*, 110; common on the barren rocky outskirts—*Melliss;* without locality—*Haughton; Whitehead.*

"French Grass."

We have been unable to match this, but in a genus like *Euphorbia* we shrink from founding a new species upon what may be only a slightly altered state of some well-known one, or even exactly the same as a described species. Roxburgh treated it as an introduced plant, and named it *Euphorbia rosea*, which it is not. Burchell, who did not distinguish between the native and introduced plants, collected it in Sandy Bay; Melliss expresses his opinion that it is probably indigenous.

MONOCOTYLEDONES.

LEMNACEÆ.

Lemna minor, Linn.

Lemna minor, Linn., Sp. Pl., ed. 1, p. 970; Hegelm., Monogr., p. 142, tt. 9 et 10.
"*Lemna polyrrhiza*, Linn.;" Melliss, St Hel., p. 330?

St Helena.—Introduced? Very common and abundant in the mountain streams, and covers every pond of water—*Melliss.*

The only specimens of a *Lemna* that we have seen from St Helena are *Lemna minor*, collected by Melliss himself, hence we suspect that these and the *Lemna polyrrhiza* of his enumeration are the same, though, of course, it is possible that both species occur. This very widely diffused aquatic was probably accidentally introduced into the island, though even in Burchell's time it was abundant, as we learn from his notes; yet he does not appear to have collected it. Roxburgh includes no *Lemna* in his catalogue, but as he visited the island after Burchell it can only be regarded as an omission. Hegelmaier, however, the monographer of the order, has no record of any member of the order occurring in this or any remote islet in any part of the world.

Water-plants sometimes spread very rapidly when introduced into a fresh region. Of this we have an example in this country in the American water-weed, *Elodea canadensis.* Yet we should not have expected that a *Lemna* would ascend the mountain streams. One species occurs in the Bermudas, whither it may have been carried by some water-bird.

JUNCACEÆ.

Juncus bufonius, Linn.

Juncus bufonius, Linn., Sp. Pl., ed. 1, p. 328; Kunth, Enum., iii. p. 353; Melliss, St Hel., p. 342.

St Helena.—Introduced? Upland places at 1000 feet altitude, apparently native—*Hooker;* in moist shady places—*Burchell;* very common on the high land—*Melliss.*

Common in nearly all temperate regions.

Juncus lomatophyllus, Spreng.

Juncus lomatophyllus, Spreng., Neue Entdeck, 1821, ii. p. 108; Buchenau, Monogr. Junc. Cap., p. 466.
Juncus capensis, Thunb., var. *latifolius*, E. Mey., Junc., p. 48, ex Kunth, Enum., iii. p. 342.

St Helena.—Indigenous? From the valley by Miss Mason's—*Burchell*, 97.

This very distinct species is common in South Africa, and was most likely introduced into the island; yet Burchell seems to have regarded it as indigenous. In his manuscript notes he gives the general habitat thus: "In rivulis regionis interioris"; and Melliss says it is very common along banks of streams throughout the island.

Juncus effusus, Linn.

Juncus effusus, Linn., Sp. Pl., ed. 1, p. 326; Melliss, St Hel., p. 342.

St Helena.—Introduced? Near Diana's Peak, at 2000 feet—*Melliss.*

This rush is neither mentioned, nor has it been collected in the island, as far as we are aware, by any other person.

CYPERACEÆ.

Several members of this order are in the earlier collections from St Helena, and were regarded as indigenous by Roxburgh, Burchell, and other travellers; but it is difficult to determine which of them really are native and which introduced, especially the species of *Cyperus* itself, as they are so easily introduced in ballast, &c.

Cyperus distans, Linn.

Cyperus distans, Linn., Suppl., p. 103; Jacq., Ic. Pl. Rar., ii. t. 299; Kunth, Enum., ii. p. 93; Benth., Fl. Austr., vii. p. 277.

St Helena.—Indigenous? In rivulets and wet places—*Burchell*, 4; moist places, ravines, &c.—*Melliss*, 132; without locality—*Cuming.*

Widely spread over the warmer regions of both hemispheres.

Cyperus umbellatus, Benth.

Cyperus umbellatus, Benth., Fl. Hongk., p. 386; Fl. Austr., vii. p. 289.
Mariscus umbellatus, Vahl, Enum., ii. p. 376; Kunth, Enum., ii. p. 118.]

St Helena.—Indigenous? In the higher pastures as well as in the dry places near the coast—*Burchell*, 5; very common generally—*Melliss.*

A common species in Tropical Asia and Africa, and occurring in North-east Australia. It is one of the few wild plants of Ascension.

Cyperus lævigatus, Linn.

Cyperus lævigatus, Linn., Mant., p. 179; Bœckl. in Linnæa, xxxv. p. 486; Benth., Fl. Austr., vii. p. 263; Rottb., Descr. et Ic. Pl., t. 16, fig. 1.
Cyperus mucronatus, Rottb., l. c., p. 19, t. 8, fig. 4; Kunth, Enum., ii. p. 17.

St Helena.—Indigenous? In watery places, Sisters' Walk, above Major Hodson's, plentifully—*Burchell*, 10; on the face of Horse Point, but rare—*Melliss*, 160.

Widely spread over the warmer regions of both hemispheres, especially in maritime districts.

Cyperus polystachyus, Rottb.

Cyperus polystachyus, Rottb., Descr. et Ic. Pl., p. 39, t. 11, fig. 1; Benth., Fl. Austr., vii. p. 261; Bœckl. in Linnæa, xxxv. p. 477; Kunth, Enum., ii. p. 13.

St Helena.—Indigenous? In the watercourse in Sisters' Walk, above Major Hodson's—*Burchell*, 8; near water streams in the ravines up the Central Ridge—*Melliss;* without locality—*Hooker.*

Common in the warmer regions of both hemispheres, and extending northwards to South China, the Mediterranean region, and the southern United States.

The form collected in St Helena by Sir Joseph Hooker is almost stemless, being only one to two inches high; and there are similar specimens in Kew Herbarium from Orissa, collected by Mr C. B. Clarke.

Cyperus difformis, Linn.

Cyperus difformis, Linn., Sp. Pl., ed. 2, p. 67; Kunth, Enum., ii. p. 38; Benth., Fl. Austr., vii. p. 268; Sibth., Fl. Græca, t. 46; Bœckl. in Linnæa, xxxv. p. 586.

St Helena.—Indigenous? Under the waterfall in Sandy Bay—*Burchell*, 6.

Very widely spread in tropical and subtropical regions in the Old World.

Burchell seems to be the only person who collected this species in St Helena.

Cyperus rotundus, Linn.

Cyperus rotundus, Linn., Syst. Veg., p. 98; Kunth, Enum., ii. p. 58; Benth., Fl. Austr., vii. p. 279; Bœckl. in Linnæa, xxxvi. p. 283.

Cyperus hexastachyus, Rottb., Descr. et Ic. Pl., t. 14, fig. 2.

St Helena.—Introduced, almost certainly. "Botanic Garden"—*Burchell*, 11; common about gardens—*Melliss.*

This is the *Cyperus herbivagus* (*errore herbicavus*), Kunth, or "Nut-grass" of Melliss's St Helena. Burchell calls it "Knot-grass," and adds "rarissime floret." It is one of the most widely dispersed species of the genus both in temperate and tropical regions.

Cyperus eragrostis, Vahl.

Cyperus eragrostis, Vahl, Enum., ii. p. 322; Kunth, Enum., ii. p. 7; Benth., Fl. Austr., vii. p. 258; Bœckl. in Linnæa, xxxv. p. 443.

St Helena.—Introduced? At Major Dentaaffe's, under the waterfall in Sandy Bay—*Burchell*, 7.

Very widely dispersed in the Old World.

Kyllinga monocephala, Rottb.

Kyllinga monocephala, Rottb., Descr. et Ic. Pl., p. 13, t. 4, fig. 4; Kunth, ii. p. 129; Benth., Fl. Austr., vii. p. 251; Bœckl. in Linnæa, xxx. p. 427.

St Helena.—Indigenous? In shady pastures—*Burchell*, 18; abundantly in damp fields, in ravines, streams of water, &c.—*Melliss.*

Roxburgh, in Beatson's St Helena Tracts, enumerates this name and "*Kyllinga sumatrensis*, Willd.," which is *Cyperus umbellatus*.

Common in Tropical Asia and Africa, and present in Eastern Australia, and probably, Mr Bentham states, identical with some of the American forms.

Fimbristylis (Oncostylis) neglecta, Hemsl. (Plate XVIII.)

Fimbristylis (*Oncostylis*) *neglecta*, Hemsl.

Pusilla, habitu *Isolepidis setaceis*, glumis brunneis carinatis utrinque longitudinaliter distincte 4–5 nervosis.

Herba annua (?) cæspitosa, 1–5 poll. alta. *Caules* filiformi, foliis sæpissime longiores. *Folia* gracillima, flaccida, concavo-convexa, acuta, marginibus leviter scabrida, basi anguste-vaginantia et pilis longis parcissime instructa. *Spiculæ* sæpissime solitariæ, interdum 2–3 aggregatæ, breviter 1-bracteatæ, vel ebracteatæ, 4-floræ; glumæ glabræ, brunneæ, nitidæ, carinatæ, utrinque longitudinaliter distincte 4–5-nervosæ, exteriores subaristatæ; stylus trifidus. *Nux* obtuse trigona, subturbinata, glabra, interdum marmorata, transverse recteque minute lineolata, stylis basi incrassata persistente coronata.

St Helena.—Endemic. On the dry rocks by the side of the side-path opposite High Knoll—*Burchell*, 15; rocky barren soil at an elevation of 1800 feet—*Melliss*.

Also in the herbarium of the British Museum, collected by Robertson in 1773.

Fimbristylis (Oncostylis) lichtensteiniana, Hemsl. (Plate XIX.)

Fimbristylis (*Oncostylis*) *lichtensteiniana*, Hemsl.
Scirpus lichtensteinianus, Bœckl. in Linnæa, xxxvi. p. 745.
Isolepis lichtensteiniana, Kunth, Enum., ii. p. 207.

St Helena.—Endemic. From the top of the Little Stone Top—*Burchell*, 16 and 17; dry rocks on Diana's Peak, at 2000 feet—*Hooker*; common among the rocks on the outer portion of the island—*Melliss*.

Scirpus setaceus, Linn.

Scirpus setaceus, Linn., Sp. Pl., ed. 1, p. 49; Benth., Fl. Austr., vii. p. 327; Reichb., Ic. Fl. Germ., t. 301.
Isolepis setacea, R. Br., Prodr. Fl. N. Holl., p. 222; Kunth, Enum., ii. p. 193; Hook. f., Fl. Tasm., ii. p. 88.
Isolepis prolifera, Melliss, St Hel., p. 344, vix R. Br.

St Helena.—Indigenous? In running water, Swanley Valley and wet places elsewhere—*Burchell*, 13 and 14; banks of streams at 2500 feet—*Hooker*, 275; damp places—*Melliss*.

Common in extra-tropical regions of the Old World, in both hemispheres.

This plant must have been abundant in the island in Burchell's time, for he states

that it was mixed with mud for plastering instead of hair. The common form in St Helena is the variety *savii;* but there is a proliferous condition (Burchell's 14) which we have referred to this species, and which is very common in the island, that may be an exceedingly slender state of *Scirpus proliferus* or some other species. Melliss states that it is very abundant, covering all the streams and moist parts of the island.

Scirpus nodosus, Rottb.

Scirpus nodosus, Rottb., Descr. et Ic. Pl., p. 52, t. 8, fig. 3; Benth., Fl. Austr., vii. p. 331; Bœckl. in Linnæa, xxxvi. p. 718.
Isolepis nodosa, R. Br., Prodr. Fl. N. Holl., p. 221; Kunth, Enum., ii. p. 199; Hook. f., Fl. Tasm., ii. p. 87; Rich., Voy. de l'Astrolabe, t. 18.
Fimbristylis textilis, Roxb. in Beatson's St Helena Tracts, p. 309; Melliss, St Hel., p. 343.
Isolepis holoschœnus, Melliss, St Hel., p. 343, non Rœmer et Schultes.

St Helena.—Indigenous. In dry pastures and other places—*Burchell;* without special localities—*Masson* and *Robertson*, in Brit. Mus.

Australia, New Zealand, St Paul Island, South Africa, and extra-tropical South America.

From Roxburgh's description and other evidence there can be no doubt that his *Fimbristylis textilis* is *Scirpus nodosus*. Although one of the commoner plants in the island, few travellers have collected specimens, and in Kew Herbarium there is only one sheet, collected by Burchell. It is, or was, extensively used for thatching. Roxburgh states that it grew in the interior of the island in plenty for every purpose, and was from three to six feet high. Burchell gives the height as two to three feet. According to Melliss, it still grows abundantly on the semibarren outskirts of the island, at altitudes of 100 to 1500 feet, and at Peak Hill, Man and Horse, and Horse Pasture.

Carex æquabilis, Boott.

Carex æquabilis, Boott, Carices, i. p. 66, t. 178.
Carex longifolia, Burchell MS. in herb. D. Turner, nunc herb. Kew, non alior.

St Helena.—Endemic. On and under High Peak—*Burchell*, 20.

Carex prælta, Boott.

Carex prælta, Boott, Carices, i. p. 66, tt. 179 et 180; Melliss, St Hel., p. 342, t. 53.
Carex pedunculata, Willd. [Muhlenb.] ex Roxb. in Beatson's St Helena Tracts, p. 302, sed omnino differt.
Carex elata, Burchell MS. in herb. D. Turner (nunc herb. Kew.)

St Helena.—Endemic. Diana's Peak—*Burchell*, 19; on the summit of Diana's Peak —*Hooker;* along the Central Ridge from Diana's Peak to High Peak, at altitudes of 2500 to 2700 feet—*Melliss.*

There seems to be only one species of *Carex* in the island; but among many good specimens the only one bearing quite ripe nuts is the type specimen of Boott's *Carex*

æquabilis, which we should rank at the highest as a variety of the same species as *Carex prælta*. Burchell distinguished them as follows:—"*Carex elata*—Culmi graciles, 4–6 pedales, spiculis quibusdam fœmineis ad apices masculis; monœcia, superiores mere masculi; inferiores feminei. *Carex longifolia*—Culmi foliis breviores, spicis masculis ad apices fœmineis; monœcia, inferiores mere fœminei."

GRAMINEÆ.

Of this order the indigenous element in St Helena seems to have been exceedingly small, consisting probably of only three or four species described below; but many widely spread grasses were common there at the beginning of the present century, and are now found all over the island. Some of these doubtless were purposely introduced, others accidentally, while a few may have reached the island quite independently of human agency. Among the commoner species are:—*Paspalum scrobiculatum*, Linn.; *Panicum colonum*, Linn.; *Panicum crus-galli*, Linn.; *Panicum sanguinale*, Linn.; *Eriochloa annulata*, Kunth; *Setaria verticillata* and *Setaria glauca*, Beauv.; *Gymnothrix caudata*, Schrad.; *Coix lachryma*, Linn.; *Phalaris canariensis*, Linn.; *Stenotaphrum americanum*, Schrank; *Anthoxanthum odoratum*, Linn.; *Polypogon littoralis*, Sm.; *Polypogon monspeliensis*, Desf.; *Cynodon dactylon*,[1] Pers.; *Dactyloctenium ægyptiacum*, Willd.; *Eleusine indica*, Gærtn.; *Eragrostis poæoides*, Beauv.; *Triodia decumbens*, Beauv.; *Poa annua*, Linn.; *Festuca myurus*, Linn.; *Festuca bromoides*, Sm.; *Bromus vestitus*, Schrad., &c. Almost every one of the foregoing grasses is now very widely spread, and in many cases it is impossible to determine where they are really indigenous.

Alopecurus paniculatus, Roxb., in Beatson's St Helena Tracts, p. 296, without a description, remains undetermined.

Ehrharta urvilleana, Kunth, Enum., i. p. 14; Duperr., Voy. "Coquille," Bot. Phaner., p. 147, t. 24, published as indigenous in St Helena, is the same as *Ehrharta longiflora*, Sm., a South African species, and must be regarded as an introduced plant.

Eleusine calycina, Roxb., l. c., p. 308, without description, is unknown to us.

"*Agrostis purpurascens*, Willd.," Roxb. in Beatson's St Helena Tracts, p. 296, is clearly *Sporobolus indicus*, R. Br. (including *Sporobolus elongatus*, R. Br.), and not an *Agrostis*, for Roxburgh's imperfect description exactly agrees, as far as it goes, with the characters of the *Sporobolus*. This grass is one of the more widely dispersed kinds, being extremely common all over Tropical and Subtropical Asia, Africa, America, and Australia, and

[1] According to Melliss, this is perhaps the most abundant grass in the island, "and doubtless indigenous," thus contradicting what he himself says (and we have reproduced elsewhere) in his introduction to the botanical part of his work. It is now almost ubiquitous in warm countries, and we regard it as an introduced plant in St Helena. Roxburgh (under *Panicum dactylon*, Linn.) says "Wire-grass" is the vernacular name, and it is supposed to be a native of the island; yet he leaves the question open.

extending to many of the islands, including New Zealand, and to some of the remote islets, including the Bermudas. Another species of the same genus, *Sporobolus virginicus*, Kunth, is almost universally spread in maritime districts, in tropical and subtropical regions, and was one of the few plants found in South Trinidad by Sir Joseph Hooker. The grain of these grasses is exceedingly small, that of *Sporobolus indicus* being about $\frac{1}{24}$th of an inch long and $\frac{1}{60}$th of an inch broad, hence the means by which they may be conveyed from place to place are almost infinite. Roxburgh regarded his "*Agrostis purpurascens*" as indigenous; Burchell's n. 40, which we take to be the same plant, was collected "by the road near Miss Mason's and in the road near Forster's;" but Burchell says nothing as to its being native or otherwise. Melliss sent a specimen of the same grass to Kew in 1863, labelled "St Helena," but not localised. It may be worth while reproducing Roxburgh's descriptive note in support of our identification :—"Indigenous on the hills of St Helena, where it grows to be from two to three feet high; perfectly erect, very naked of leaves, as they are only few in number, but short and very slender. The inflorescence is a long slender panicle composed of numerous small, simple, or compound appressed branches, crowded with numerous short-pedicelled, smooth flowers. Calycine valves unequal, scarce half the length of the corolla, which has its two valves nearly equal and rather acute; but nothing like an awn either here or to the calyx."

Agrostis simulans, Hemsl.

Agrostis simulans, Hemsl., n. sp.

In aspect and structural character this is so near the European *Agrostis alba*, var. *stolonifera*, as to require close examination in order to find any tangible differences. The late General Munro had marked it as a "good species," and after a careful comparison we have adopted his view. Yet it is not easy to draw up a description that would exclude every other species. Perhaps it will be better to indicate the differences rather than merely describe the plant. Of the same habit of growth as *Agrostis stolonifera*, *Agrostis simulans* has more slender culms and smaller leaves, with scarcely any trace of a ligule in the place of the prominent one of the former species. The branches of the panicle are fewer and relatively longer, and ultimately become nearly horizontal; and the pale is smaller in comparison than in *Agrostis stolonifera*.—Hook., Ic. Pl., t. 1455.

There are copious specimens collected by various travellers, and they all exhibit the differences indicated.

St Helena.—Endemic. Sandy Bay—*Burchell*, 36; Diana's Peak, above 2000 feet—*Hooker*, 269; without locality—*Melliss*, in 1863.

In his manuscript notes Burchell states that this grass was abundant in pastures in the interior of the island.

Eragrostis saxatilis, Hemsl. (Plate L.)

Eragrostis saxatilis, Hemsl., n. sp.

Species distinctissima facie *Festucæ* species quædam foliis gracillimis paniculis subsimplicibus, spiculis laxis glumis rigidis acuminatis.

Perennia fere undique glaberrima, dense cæspitosa, rhizomate crassiuscula. *Culmi* erecti, filiformes, 9–15 poll. alti, folia æquantes vel breviores. *Folia* dura, anguste vaginantia, arctissime (saltem in siccis) involuta, setacea, margine minute serrulata, apice acutissima, in loco ligulæ longiuscule albo-barbata. *Paniculæ* strictæ, 4–6 poll. longæ, ramulis sæpius 1–3 spiculatis, inferioribus longioribus (1–2 poll.) plurispiculatis; spiculæ laxæ, sæpissime 5–6 floræ, 2–4 lineas longæ, graciliter breviterque pedicellatæ, pedicellis aliis spiculis brevioribus vel æqualibus aliis longioribus. *Flores* distichi, dissitiusculi, hermaphroditi, vel supremus imperfectus; glumæ duriusculæ, longe acuminatæ, prominenter carinatæ, 2-exteriores vacuæ paulo breviores, anguste lanceolatæ, 1-nerviæ, florentes 3-nerviæ, ovato-lanceolatæ; palea paulo brevior valide 2-carinata, introflexa, apice truncata, carinis minute serrulatis; stamina 3; ovarium glabrum; styli distincti, stigmatibus longiuscule plumosis. *Caryopsis* libera, cylindrica, glabra.

St Helena.—Endemic. From off Lot—*Burchell*, 50½; among dry rocks, by Major Dentaaffe's, in Sandy Bay—*Burchell*, 50; growing in tufts on the rocky, barren hills near Lot's Wife on the south-west side of the island, at elevations of 1500 to 2000 feet—*Melliss*.

A very distinct grass, growing in dense tufts, the rhizome eventually attaining a considerable size. The inflorescence and narrow rather hard glumes remind one of some of the forms of *Festuca ovina* rather than the genus *Eragrostis*, but the structure is that of the latter genus. Burchell's general indication of the habitat is, "In locis saxosis præruptis siccissimis."

Aristida racemosa, Sprengel.

Aristida racemosa, Sprengel, Mantissa Prima, p. 35; Kunth, Enum. Pl., i. p. 197.
Chætaria racemosa, Rœm. et Schult., Syst. Veg., ii. p. 396.

"Ex insula St Helenæ."

We have failed to identify this.

Demazeria oblitera, Hemsl. (Plate LI. figs. 1–8).

Demazeria oblitera, Hemsl., n. sp.

Cæspitosa, glaberrima, culmis gracilibus adscendentibus, gluma florifera tantum margine ciliata.

Annua? radix fibrosa, fibrillis gracillimis duris 4–5 poll. longis. *Culmi* 2–9 poll. longi, læves, demum nitidi, 4–6 nodi, geniculati. *Folia* fasciculorum radicalium brevissima,

lævia, striata, arcte involuta, obtusiuscula, dura, 3–6 lineas longa, caulina usque ad 1½ poll. longa, ligula brevissima pauci-ciliata. *Paniculæ* terminales, solitariæ, spiciformes, subsessiles, 6–15 lineas longæ, spiculis breviter pedicellatis 3–4 floris imbricatis. *Flores* hermaphroditi vel supremus imperfectus; glumæ demum subcoriaceæ, acutæ vel florentes breviter acuminatæ nec aristatæ; 2-exteriores vacuæ, prominenter 5-costatæ; carina leviter scabrida; florens vix brevior, obscure pluri-nervia, carina nuda, margine infra medium longe ciliata; palea oblonga minute ciliolata. *Caryopsis* omnino libera, oblonga, nitida.

St Helena.—Endemic. Growing in barren places near, and south-east from the Gut in Deadwood—*Burchell*, 59.

We have only seen one plant of this grass, which we have ventured to describe as new, because we have not been able to identify it with any known species of the genus, though it is closely allied to *Demazeria acutiflora* (*Brizopyrum acutiflorum*, Nees). The latter is a native of South Africa, and apparently very rare, for we have only seen specimens collected by Drège in Piquetberg, on the west coast, about one hundred miles north of Cape Town. It differs from our plant in its erect habit in having usually several inflorescences on the same culm, in its very much more acuminate glumes, of which the outer want the prominent ribs. Further, the almost aristate flowering glume is copiously bearded on the keel as well as on the margins (Pl. LI. figs. 9–12). It is possible that the St Helena plant may be a stray introduction from the Cape of a species which is rare and local there. At the same time it was collected in a remote part of the island, where one would little expect to find a solitary introduced plant.

CRYPTOGAMÆ.—VASCULARES.

LYCOPODIACEÆ.

Lycopodium saururus, Lam.

Lycopodium saururus, Lam., Encycl. Bot., iii. p. 653; Swartz, Synop. Fil., p. 176; Spring, Monogr. Lycopod., partie 1, p. 21, et partie 2, p. 6; Baker, MSS. in Herb. Kew.
Lycopodium insulare, Carmich. in Trans. Linn. Soc. Lond., xii. p. 509.
Lycopodium axillare, Roxb. in Beatson's St Helena Tracts, p. 312.
Lycopodium taxifolium, Melliss, St Hel., p. 357, non Swartz.
Lycopodium taxifolium, Spring, Monogr. Lycopod., partie 1, p. 31, *pro parte*.
Lycopodium selago, Spring, Monogr. Lycopod., partie 2, p. 5, *pro parte*.

St Helena.—Indigenous. Among grass on the summit of Diana's Peak—*Burchell*, 197; *Melliss;* open steep marshy ground, bordered with wood, 200 feet below the top of Diana's Peak, on the east side, rare—*Hooker;* without locality—*Lefroy; Lyall; Morris*, in 1883.

Widely spread in Africa and South America, and in islets of the Atlantic and Southern Oceans.

Lycopodium cernuum, Linn.

Lycopodium cernuum, Linn., Sp. Pl., ed 2, p. 1566; Swartz, Synop. Fil., p. 178; Bory in Duperr. Voy. "Coquille," Bot. Crypt, p. 246; Spring, Monogr. Lycopod., partie 1, p. 79, partie 2, p. 37; Roxb. in Beatson's St Helena Tracts, p. 311; Pritchard, Cat. St Hel. Pl., p. 19; Kuhn, Fil. Afr., p. 183.

St Helena.—Indigenous. On the top of Diana's Peak—*Burchell*, 198; *Hooker;* without locality—*Seemann; Morris*, in 1883.

"Plentiful on grassy banks on the high Central Ridge, near Diana's Peak, at 2000 to 2700 feet."—*Melliss.*

Common and generally diffused in the tropics, and extending into the south temperate regions to New Zealand; it also occurs in some of the other remote islets, as Ascension and St Paul.

FILICES.

POLYPODIACEÆ.

Dicksonia arborescens, L'Herit.

Dicksonia arborescens, L'Herit., Sert. Angl., p. 31; Hook., Sp. Fil., i. p. 66, t. 22, A.; Hook. and Bak., Synop. Fil. p. 50; Roxb. in Beatson's St Helena Tracts, p. 306; Kuhn, Fil. Afr., p. 160; Melliss, St Hel., p. 553, t. 54.
Balantium arborescens, Hook., Gen. Fil., t. 20.
Balantium auricomum, Kaulf., Enum. Fil., p. 228, t. 21, fig. 12.
Dicksonia integra, Swartz, Synop. Fil., p. 136.

St Helena.—Endemic. Diana's Peak and High Peak—*Burchell*, 193, 194; *Hooker; Cuming; Seemann;* and many other travellers, including *Morris*, in 1883.

The only tree-fern of the island. It grows on the Central Ridge at Diana's and High Peaks at an altitude of 2400 feet up to the summits. Burchell describes the trunk as from twelve to twenty feet high; and Roxburgh says "general height, when full grown, twenty or more feet, and of various thicknesses up to that of a man's body, with fronds from four to ten feet long." In 1840, Sir Joseph Hooker found very few stems above three feet high, and the tallest was only eleven feet, while most of the plants were very stunted, the stems scarcely appearing above the surrounding herbage. Melliss gives the dimensions as four to ten feet, with a diameter of six to eight inches.

Hymenophyllum capillaceum, Roxb.

Hymenophyllum capillaceum, Roxb. in Beatson's St Helena Tracts, p. 311; Hook., Sp. Fil., i. p. 109, t. 38, B.; Hook. and Bak., Synop. Fil., p. 58; Melliss, St. Hel., p. 354; Kuhn, Fil. Afr., p. 38.
Hymenophyllum infortunatum, Bory in Duperr. Voy. "Coquille," Bot. Crypt., p. 284, t. 38, fig, 3; Hook. f., Fl. Antarctica, p. 104.
Hymenophyllum capillare, Pritchard, Cat. St. Hel. Pl., p. 18.
Sphærocionium infortunatum, Presl, Hymen., p. 35.

St Helena.—Endemic. On the trunks of the tree-fern and other trees, on the summit

of Diana's Peak—*Roxburgh; Burchell*, 195; *Hooker; Seemann; Mellis* and others; *Morris*, in 1883.

Cheilanthes multifida, Swartz.

Cheilanthes multifida, Swartz, Synop. Fil., pp. 129 et 334; Hook., Sp. Fil., ii. p. 90, t. 100, B.; Hook. and Bak., Synop. Fil., p. 138; Melliss, St. Hel., p. 353; Hook., Gard. Ferns, t. 39; Kuhn, Fil. Afr., p. 73.
Cheilanthes tenuifolia, Roxb. in Beatson's St Helena Tracts, p. 303?
Cheilanthes capensis, Eckl. in Un. It., n. 168.
Adiantum globatum, Poir., Suppl., i. p. 144.

St Helena.—Indigenous. On the rocks in Breakneck Valley—*Burchell*, 192; without locality—*Bennett;* amongst rocks and stones on the somewhat barren and exposed parts of the island at High Knoll, High Hill, Red Hill, Thompson's Hill, the Friar Rock, Sandy Bay, &c.—*Melliss; Morris*, in 1883.

Common in South Africa, and also found in Java.

Pteris flabellata, Thunb.

Pteris flabellata, Thunb., Prodr. Fl. Cap., p. 733; Swartz, Synop. Fil., p. 99; Hook., Sp. Fil., ii. p. 185; Hook. and Bak., Synop. Fil., p. 161; Melliss, St Hel., p. 356.
Pteris arguta, Ait., var. *flabellata*, *α major*, Mett. ex Kuhn, Fil. Afr., p. 76.
Pteris elegans, Jacq., Fragm., p. 74, t. 116.
Pteris arguta, Schl., Adumb. Fil. Prom. Bon. Spei, p. 43; Kunze in Linnæa, vi. p. 186.
Pteris semiserrata, Roxb. in Beatson's St Helena Tracts, p. 319.

St Helena.—Indigenous. Swanley Valley—*Burchell*, 189; steep grassy banks on the southern declivity of Diana's Peak, below the trees—*Hooker;* without locality—*Seemann, Cuming*, and *Haughton; Morris*, in 1883.

A common African fern, ranging from Abyssinia and Fernando Po to the Cape of Good Hope; also in Bourbon and Rodriguez. A variety occurs in Ascension.

This, according to Melliss, is the most common roadside fern in the island, and it is also abundant in the ravines on the upper lands, mostly between 1500 and 2000 feet, where it selects a rocky soil. It is very plentiful about such places as Joho's Hole, and even occurs on the summit of Lot and on the eastern side of High Knoll.

Pteris paleacea, Roxb. (Plate XX.)

Pteris paleacea, Roxb. in Beatson's St Helena Tracts, p. 319; Hook., Sp. Fil., ii. p. 186, t. 133, A.; Hook. and Bak., Synop. Fil., ed. 2, p. 159; Melliss, St Hel., p. 356.

St Helena.—Endemic. *Burchell; Nuttall; Cuming; Hooker; Seemann; Haughton; Melliss; Morris*, in 1883.

"A less abundant species than *Pteris flabellata*, found at a higher altitude (at about 2500 feet), where its remarkable fan-like fronds mingle with *Dicksonia* and *Asplenium* on the mountain spurs, and in the ravines north and south of the Central Ridge, near

High and Diana's Peaks."—*Melliss.* "Ravines north and south of the Central Ridge."—*Morris.*

Asplenium platybasis, Kunze. (Plate XXI.)

Asplenium platybasis, Kunze ex Mett., Aspl., n. 154; Hook. and Bak., Synop. Fil., p. 206; Melliss, St Hel., p. 352.
Asplenium firmum, Fée, Gen. Fil., p. 197; Kuhn, Fil. Afr., p. 102.
Asplenium falcatum, Roxb. in Beatson's St Helena Tracts, p. 299.
Asplenium falcatum, Lam., and *firmum*, Moore, Ind. Fil., p. 129; Hook., Sp. Fil., iii. p. 160.

St Helena.—Endemic. Diana's Peak and Sandy Bay Ridge—*Burchell*, 183; rocks on Diana's Peak, rare—*Hooker;* without locality—*Seemann; Cuming; Lyall; Lady Dalhousie*, and others, including *Morris*, in 1883.

This is scarcely different from the widely spread *Asplenium falcatum*, Lam.

Asplenium furcatum, Thunb.

Asplenium furcatum, Thunb., Prodr. Fl. Cap., p. 735; Hook., Sp. Fil., iii. p. 165; Hook. and Bak., Synop. Fil., p. 214; Schk., Fil., p. 73, t. 79; Melliss, St Hel., p. 352.
Asplenium præmorsum, Swartz, Fl. Ind. Occ., iii. p. 1620, et Synop. Fil., p. 83; Roxb. in Beatson's St Helena Tracts, p. 299.

St Helena.—Indigenous. Sandy Bay—*Burchell*, 182; among loose stones in the descent into Sandy Bay, near Lot—*Hooker;* without locality—*Lefroy; Haughton;* and *Morris*, in 1883.

Melliss records it as growing in rocky crevices and on old walls, at 1500 to 1900 feet, near St Paul's Church, Terrace Knoll, &c.

Very widely dispersed in the tropics, and extending southward in Africa to the Cape of Good Hope.

Asplenium lanceolatum, Huds.

Asplenium lanceolatum, Huds., Fl. Angl., ed. 2, p. 454; Engl., Bot., t. 240; Hook., Sp. Fil., iii. p. 190; Hook. and Bak., Synop. Fil., p. 217; Kuhn, Fil. Afr., p. 104.

St Helena.—Indigenous? Without locality—*Hooker.*

South-west Europe; North Africa; Azores; Madeira; Canaries.

There is some doubt whether this fern was collected in St Helena, for the specimen is without an original label, and no other traveller has collected it in the island so far as we are aware. Melliss omits all mention of it.

[*Asplenium marinum*, Linn., is recorded by Moore (Ind. Fil., ii. p. 114) as occurring in St Helena and the Bermudas, but we have seen no specimens of it from either place, and the record was most likely based upon a mistake.]

Asplenium compressum, Swartz.

Asplenium compressum, Swartz in Schrad. Journ., 1800, ii. p. 52, et Synop. Fil., pp. 79 et 270; Hook., Sp. Fil., iii. p. 121; Hook., Fil. Exot., t. 76; Hook. and Bak., Synop. Fil., p. 206; Melliss, St Hel., p. 352; Luerssen in Abhandl. Naturw. Ver. Bremen., vii. p. 278; Kuhn, Fil. Afr., p. 99; Bory in Duperr. Voy. "Coquille," Bot. Crypt., p. 270.

Asplenium fœcundum, Kunze in Linnæa, xx. pp. 234 et 305.

Darea fœcunda, Fée, Gen. Fil., p. 333.

St Helena.—Indigenous. Without locality—*Burchell*, 184; wet places on rocks in the shaded woods of Diana's Peak—*Hooker;* also collected by *Haughton*, *Cuming*, *Lady Dalhousie*, and *Morris*, in 1883.

"Abundant amongst the native vegetation on the high Central Ridge, growing in the wettest parts, at an altitude of 2000 feet and upwards."—*Melliss.*

Also found in South Trinidad, according to Luerssen, in the place cited above, where he states that there is not the slightest doubt of the correctness of his identification. Through inadvertence Melliss copied under this species the distribution of some other, extending to South Africa, Bourbon, Madagascar, and Mauritius.

Asplenium erectum, Bory.

Asplenium erectum, Bory in Willd. Sp. Pl., v. p. 328; Kuhn, Fil. Afr., p. 102; Hook., Sp. Fil., iii. p. 126, t. 178; Melliss, St. Hel., p. 352; Hook., Fil. Exot., t. 72 (var. *proliferum*).

Asplenium lunulatum, Swartz, Synop. Fil., p. 80; Hook. and Bak., Synop. Fil., p. 202; Bory in Duperr. Voy. "Coquille," Bot. Crypt., p. 270.

Asplenium radicans, Pritchard, Cat. Pl. St Hel., p. 6, fide Hooker.

Asplenium reclinatum, Houlst. and Moore in Gard. Mag. Bot., ii. p. 260.

Asplenium tenellum, Roxb. in Beatson's St Helena Tracts, p. 299; Kuhn, Fil. Afr., p. 117.

St Helena.—Indigenous. Moist shady places on Diana's Peak, at 2000 feet—*Hooker;* near Carson's Gate—*Burchell*, 181; also collected by *Haughton*, *Cuming*, *Lefroy*, and others, as well as by *Morris*, in 1883.

Generally spread and common in the tropics, and extending into some extra-tropical regions. It is one of the few indigenous plants of Ascension, and it also occurs in Tristan da Cunha.

Kuhn (Fil. Afr., p. 105) enumerates *Asplenium lunulatum*, Swartz, as distinct from *Asplenium erectum*, Bory (l. c., p. 102), and he records both from St Helena, the former in the collection of Durville. He also retains specific rank for Roxburgh's *Asplenium tenellum*, citing Cuming, Melliss, and others as collectors of it.

Asplenium (Diplazium) nigro-paleaceum, A. Braun. (Plate XXII.)

Asplenium (Diplazium) nigro-paleaceum, A. Braun in Ind. Sem. Hort. Berol., 1861, App., p. 2; Baker in Hook. and Bak. Synop. Fil., p. 240.

Asplenium (Diplazium) arborescens, Mett. in Hook. Sp. Fil., iii. p. 256, *pro parte;* et Fil. Hort. Lips., p. 78.

Diplazium nigro-paleaceum, Kunze in Linnæa, xxiv. p. 270; Melliss, St Hel., p. 354, excl. synon.

Diplazium arborescens, J. Sm., Cat. Fil. Hort. Kew.

St Helena.—Endemic. Diana's Peak and Sandy Bay Ridge, and on woody hills in many places—*Burchell*, 186; dark woods, Diana's Peak—*Hooker;* without locality—*Walker, Haughton, Seemann;* common on roadsides in the higher lands—*Morris*, in 1883.

Melliss states that this grew somewhat plentifully on both sides of the Central Ridge, and was rarely found below an elevation of 1400 feet.

It was formerly regarded as a form of *Asplenium arborescens*, Mett., a species inhabiting Mauritius, Bourbon, Madagascar, and Johanna Island.

Nephrodium (Lastrea) patens, Desv.

Nephrodium (Lastrea) patens, Desv. in Mém. Soc. Linn. Par., vi. p. 258; Hook., Sp. Fil., iv. p. 95; Hook. and Bak., Synop. Fil., p. 262; Melliss, St Hel., p. 355.
Aspidium patens, Swartz, Synop. Fil., p. 49; Raddi, Fil. Bras., p. 32, t. 48.

St Helena.—Indigenous. In Swanley Valley, above and below the Willow Pond—*Burchell*, 175; without locality—*Lefroy, Cuming*, and *Morris*, in 1883.

Melliss says that this grows at a lower altitude than the other species of the genus, ranging from 1000 to 2500 feet, and was found on the sides of mountain streams in the neighbourhood of Oakbank, Powel's Spring, Willow Cottage, &c.

A common species in America from Florida and Texas to Chili and South Brazil; also in Tropical Africa and Polynesia.

Nephrodium (Lastrea) molle, Desv.

Nephrodium (Lastrea) molle, Desv. in Mém. Soc. Linn., vi. p. 258; Hook., Sp. Fil., iv. p. 67, *pro parte;* Hook. and Bak., Synop., p. 293.

St Helena.—Indigenous. *Morris*, in 1883.

This fern is found in nearly all tropical and subtropical regions throughout the world. As it was not collected in the island by any previous traveller, it is probably of recent introduction.

Nephrodium (Lastrea) cognatum, Hook.

Nephrodium (Lastrea) cognatum, Hook., Sp. Fil., iv. p. 123, t. 256; Hook. and Bak., Synop. Fil., p. 279; Melliss, St Hel., p. 355.
Lastrea cognata, Presl., Epim. Bot., p. 40.
Aspidium cognatum, Mett., Monogr. Aspid., p. 61; Kuhn, Fil. Afr., p. 128.

St Helena.—Endemic. Halley's Mount and Diana's Peak—*Burchell*, 176; Diana's Peak—*Hooker;* without locality—*Cuming; Seemann; Lyall;* and *Morris*, in 1883.

"One of the ferns of the highest land on the Central Ridge and Diana's Peak, at 2400 feet."—*Melliss.*

Kuhn cites "Ins Ascensionis (Hb. Miquel)," but we think this may be a mistake, because it is not in any of our numerous English collections from the island.

Nephrodium (Lastrea) napoleonis, Bory.

Nephrodium (Lastrea) napoleonis, Bory in Belang, Voy. Ind. Or. Bot., p. 61, t. 6, ex Hook., Sp. Fil., iv. p. 123, t. 255; Hook. and Bak., Synop. Fil., p. 279; Melliss, St Hel., p. 355.
Aspidium napoleonis, Fée, Gen. Fil., p. 292; Mett., Monogr. Aspid., p. 61.
Lastrea napoleonis, Presl., Epimel. Bot., p. 40.
Aspidium petersenii, Kunze ex Kuhn, Fil. Afr., p. 137.
Aspidium riparium, Roxb. in Beatson's St Helena Tracts, p. 298.

St Helena.—Endemic. Thompson's Wood Hill, the perpendicular woody rocks of Sandy Bay, and the bank at French's Gut—*Burchell*, 172, 173, 174; common on rocks in the woods of Diana's Peak—*Hooker;* on rocks near a spring close to Buonaparte's tomb—*Wallich;* without locality—*Bennett; Cuming; Harvey;* and *Seemann;* also, on Kuhn's authority, *Petersen; Perrottet;* and *Andersson.*

On the authority of Melliss, this abounded in 1875 on the banks of Napoleon's Cabbage-tree Road, and on the road to Newfoundland, at 2500 feet; but it is the only one of the endemic ferns not collected by Morris in 1883.

[**Aspidium serratum**, Kuhn.

Aspidium serratum, Kuhn, Fil. Afr., p. 142.

Amblya serrata (Fée, Mém. Soc. Sc. Nat. Strasb., xvi. p. 35, t. 40), "St Helena," is unknown to us.

Roxburgh includes *Aspidium coriaceum*, which is the same as *Aspidium capense*, in his list. We have seen no specimens from St Helena, and suspect that, as he also collected in South Africa, where this fern is common, he may have got his specimens confused. At the same time, it is not a fern unlikely to be found in the island. See its distribution in the enumeration of the plants in the Tristan da Cunha group.]

Polypodium marginellum, Swartz.

Polypodium marginellum, Swartz, Fl. Ind. Occ., iii. p. 1631; Hook., Sp. Fil., iv. p. 164; Hook. and Bak., Synop. Fil., p. 321; Kuhn, Fil. Afr., p. 149; Melliss, St Hel., p. 355.
Grammitis marginella, Swartz, Synop. Fil., p. 22; Roxb. in Beatson's St Helena Tracts, p. 310.
Grammitis linearis, Bory in Duperr. Voy. "Coquille" Bot. Crypt., p. 257.

St Helena.—Indigenous. On the trunk of the shining-leaved cabbage-tree, under West Lodge Telegraph—*Burchell*, 185; Diana's Peak—*Hooker;* without locality—*Nuttall; Shuter;* and *Haughton;* also *Morris*, in 1883.

Widely dispersed in Tropical America, and occurring in the Cape Verde Islands and Samoa.

Polypodium lanceolatum, Linn.

Polypodium lanceolatum, Linn., Sp. Pl., ed. 1, p. 1082; Swartz, Synop. Fil., p. 26; Hook. and Bak., Synop. Fil., p. 356; Kuhn, Fil. Afr., p. 147; Melliss, St. Hel., p. 356.
Pleopeltis ensifolia, Carmich. in Hook., Exot. Fl., i. t. 62.
Polypodium lepidotum, Willd. in Schl. Adumb., p. 17, t. 8; Hook., Sp. Fil., v. p. 56.
Polypodium macrocarpum, Willd., Sp. Pl., v. p. 147; Roxb. in Beatson's St Helena Tracts, p. 148.
Pleopeltis helenæ, Presl., Tent. Pterid., p. 193.

St Helena.—From the stem of a tree on Diana's Peak—*Burchell*, 170; climbing on rocks and trunks of trees—*Hooker*; also collected by *Cuming*; *Haughton*; and *Seemann*; and by *Morris*, in 1883.

A common and widely diffused species in warm countries, in America, as well as in the Old World. By an oversight it is recorded from Tristan da Cunha, Carmichael, in the "Species Filicum." *Pleopeltis ensifolia*, Carmich., was founded upon a specimen collected by Carmichael at the Cape of Good Hope; hence, probably, the error.

Polypodium molle, Roxb.

Polypodium molle, Roxb. in Beatson's St Helena Tracts, p. 318; Hook. and Bak., Synop. Fil., p. 308.
Phegopteris mollis, Kuhn, Fil. Afr., p. 123.
Phegopteris deltoidea, Mett. ex Kuhn, l. c.
Polypodium (*Phegopteris*) *dianæ*, Hook., Sp. Fil., iv. p. 234; Melliss, St Hel., p. 355, t. 55.

St Helena.—Endemic. Harding's Spring and Swanley Valley—*Burchell*, 171; dense woods east flank of Diana's Peak—*Hooker*; without locality—*Cuming*; *Haughton*; and *Morris*, in 1883.

"A very common roadside fern along Sandy Bay Ridge, and the high land at 2000 to 2500 feet; found both on the north and south sides of the Central Ridge."—*Melliss.*

Polypodium (Phegopteris) rugulosum, Labill.

Polypodium (*Phegopteris*) *rugulosum*, Labill., Fl. Nov. Holl., ii. p. 92, t. 241; Hook., Sp. Fil., iv. p. 272; Melliss, St Hel., p. 356; Roxb. in Beatson's St Helena Tracts, p. 318.
Polypodium (*Phegopteris*) *punctatum*, Thunb., β *rugulosum*, Hook. and Bak., Synop. Fil., p. 312.
Polypodium viscidum, Roxb. in Beatson's St Helena Tracts, p. 319.
Polypodium dicksonifolium, Roxb., l. c., p. 318?
Hypolepis helenensis, Fée, Gen. Fil., p. 147.
Phegopteris helenensis, Kuhn, Fil. Afr., p. 122.
Gymnogramme helenensis, Fée, Mém., viii. p. 79.

St Helena.—Indigenous. Swanley Valley, near the Willow Pond, *Burchell*, 191; without locality—*Hooker*; *Cuming*; *Nuttall*; *Lefroy*; and *Morris*, in 1883.

"One of the most abundant of the island ferns, growing along the roadsides, at 1500 to 2000 feet, in the neighbourhood of Joho's Hole, Sandy Bay Ridge, &c."—*Melliss.*

Whether regarded as a distinct species or only as a variety of *Polypodium punctatum*, this has a very wide area of distribution, though it does not appear to be a native of America.

Gymnogramme haughtoni, Hook.

Gymnogramme haughtoni, Hook. in Hook. and Bak., Synop. Fil., p. 381; Melliss, St Hel., p. 354.
Gymnogramme cordata, Schl., Adumbr., p. 16; Hook., Sp. Fil., v. p. 131, in part.
Grammitis cordata, Swartz, var. *sub-bipinnata*, Hook., 2nd Cent. Ferns, t. 7.

St Helena.—Endemic. On the Barn Rock—*Haughton;* from the ridge between James's and Rupert's Valleys—*Burchell*, 187, 188; without locality—*Dr Alexander; Morris*, in 1883.

"Somewhat rare, and mostly confined to the north and north-eastern parts of the island, such as the Barn, Rupert's Hill, Ladder Hill, High Knoll, and High Point, at 600 to 1600 feet."—*Melliss.*

Gymnogramme cordata, of which this is scarcely more than a variety, is common in South Africa.

Monogramme graminioides, Baker.

Monogramme graminioides, Baker in Hook. and Bak., Synop. Fil., p. 375; Melliss, St Hel., p. 354.
Monogramme furcata, Desv., Journ. de Bot., i. p. 23; Hook., Sp. Fil., v. p. 121.
Grammitis graminoides, Swartz, Synop. Fil., p. 22, t. 1, fig. 5.
Asplenium graminoides, Swartz, Fl. Ind. Occ., iii. p. 1608.
Pleurogramme graminoides, Fée, Gen. Fil., p. 101.
Cochlidium graminoides, Kaulf., Enum. Fil., p. 86; Schott, Gen. Fil., cum ic.

St Helena.—Indigenous? Without special locality—*Menzies.*

This miniature fern, recorded from Jamaica, Brazil, and Chili, is only represented in Kew Herbarium by one specimen, labelled "*Grammitis graminoides*, Sw., St Helena," in the handwriting of Menzies himself. Menzies touched at the island on his way to New Zealand and collected a few ferns, this apparently among them, though Sir W. Hooker (Sp. Fil., v. p. 122) says "possibly an error in the locality." It is true no other collector has found it in the island; but then, as the plant is very slender, and only about an inch high, it is probable that it has been overlooked.

Acrostichum dimorphum, Hook. and Grev.

Acrostichum dimorphum, Hook. and Grev., Ic. Fil., t. 145; Hook., Sp. Fil., v. p. 209; Hook. and Bak., Synop. Fil., p. 406; Hook., 2nd Cent. Ferns, t. 90; Kuhn, Fil. Afr., p. 44; Melliss, St Hel., p. 352.
Olfersia dimorpha, Presl., Tent. Pterid., p. 235.
Elaphoglossum dimorphum, Moore, Ind. Fil., iii. p. 355.
Microstaphyla furcata, Fée, vii$^{\text{ème}}$ Mém. Fam. Foug., p. 45, t. 13, fig. 1, non Presl.

St Helena.—Endemic. On Halley's Mount and Sandy Bay—*Burchell*, 180; top of Diana's Peak, very common—*Hooker;* without locality—*Haughton; Shuter; Walker; Whitehead; Melliss;* and *Morris*, in 1883.

"On both sides of the Central Ridge, at 2000 to 2700 feet, above Swampy Gut, &c.; somewhat rare."—*Melliss.*

A distinct species, being the only one of the *Elaphoglossum* section that has the fronds distinctly incised or crenated.

Acrostichum (Elaphoglossum) bifurcatum, Swartz.

Acrostichum (Elaphoglossum) bifurcatum, Swartz, Synop. Fil., p. 12; Hook., Sp. Fil., v. p. 209; Roxb. in Beatson's St Helena Tracts, p. 296; Hook., 2nd Cent. Ferns, t. 91; Melliss, St Hel., p. 352.
Acrostrichum (Polybotrya) bifurcatum, Swartz; Hook. and Bak., Synop. Fil., p. 413.
Microstaphyla furcata, Presl, Epim. Bot., p. 160.
Anagramme paradoxa, Fée, Gen. Fil., p. 64.
Osmunda bifurcata, Jacq., Collect., iii. t. 20, fig. 2.
Gymnogramme bifurcata, Kunze in Linnæa, x. p. 496.
Darea furcans, Bory in Duperr. Voy. "Coquille," Bot. Crypt., p. 269, t. 35, fig. 2 (sterile).
Polybotrya furcata, Mett. ex Kuhn, Fil. Afr., p. 52.
Filicula cornuta Insulæ Sanctæ Helenæ, Pluken., Phytogr., t. 350, fig. 4.

St Helena.—Endemic. On damp half-mouldered rocks near High Peak, and on the rocks at Flagstaff—*Burchell,* 177; wet rocks and mossy banks, abundant—*Hooker;* without locality—*Haughton; Cuming; Nuttall; Seemann; Lyall; Shuter; Lefroy; Lady Dalhousie;* and *Morris,* in 1883.

One of the commoner ferns of the island; according to Melliss, thickly covering the wet banks along the sides of the roads over Sandy Bay Ridge, at about 2000 feet.

Kuhn records this fern from Ascension, collected by Durville; but Bory cites St Helena as Durville's locality.

Acrostichum nervosum, Bory.

Acrostichum nervosum, Bory in Duperr. Voy. "Coquille," Bot. Crypt., p. 252; Kuhn, Fil. Afr., p. 46.
Acrostichum (Olfersia) subdiaphanum, Hook. and Grev., Ic. Fil., t. 105; Hook., Sp. Fil., v. p. 225; Hook. and Bak., Synop. Fil., p. 416; Melliss, St Hel., p. 352.
Aconiopteris subdiaphana, Presl., Tent. Pterid., p. 236, t. 10, fig. 17.
Aconiopteris nervosa, J. Sm.
Acrostichum lanceolatum, Roxb. in Beatson's St Helena Tracts, p. 296.

St Helena.—Endemic. Diana's Peak—*Burchell,* 179; trunks of trees, top of Diana's Peak, rare—*Hooker;* amongst the grass on the highest ridge near Diana's Peak—*Haughton;* without locality—*Shuter; Nuttall; Morris,* in 1883.

One of the rarer ferns, found only in the most elevated parts of the Central Ridge.

Melliss erroneously records it as an inhabitant of Bourbon as well as of St Helena. It was originally published as a native of Madras in consequence of Dr Shuter sending it thence to Sir W. Hooker without locality.

Acrostichum (Elaphoglossum) conforme, Swartz.

Acrostichum (Elaphoglossum) conforme, Swartz, Synop. Fil., pp. 10 et 192, t. 1, fig. 1; Hook., Sp. Fil., v. p. 198; Hook. and Bak., Synop. Fil., p. 401; Kuhn, Fil. Afr., p. 43; Melliss, St Hel., p. 352.

St Helena.—Indigenous. On the stems of the Cabbage-trees on Diana's Peak—*Burchell*, 178; very rare, in shaded woods of Diana's Peak—*Hooker;* on *Dicksonia arborea*, Diana's Peak—*Melliss;* without locality—*Haughton; Morris*, in 1883.

A very widely diffused fern in warm regions of both the eastern and western hemispheres, and one of those found in Tristan da Cunha.

Melliss states that it is somewhat rare in St Helena. It is probable that this rather than *Acrostichum subdiaphanum* is the *Acrostichum lanceolatum* of Roxburgh. Fée (Acrost., p. 36, t. 7, fig. 1) records his *Acrostichum laurifolium* (which is different from *Acrostichum laurifolium*, Thouars, a synonym of *Acrostichum conforme*) from Bourbon and St Helena: the latter habitat being doubtless an error.

OPHIOGLOSSACEÆ.

Ophioglossum vulgatum, Linn., var.

Ophioglossum vulgatum, Linn., Sp. Pl., ed. 1, p. 1062, var.; Hook. and Bak., Synop. Fil., p. 445; Melliss, St Hel., p. 355.

Ophioglossum opacum, Carmich. in Trans. Linn. Soc. Lond., xii. p. 509; R. Br. ex Kuhn, Fil. Afr., p. 178.

Ophioglossum lusitanicum, Roxb. in Beatson's St Helena Tracts, p. 315?

St Helena.—Indigenous. In the driest and most sterile hills—*Burchell*, 196; without locality—*Haughton; Morris*, in 1883.

Melliss records it as plentiful on the barren rocky outskirts of the island, principally on the northern side. It is universally spread in tropical, temperate, and antarctic regions.

The form collected by Haughton in St Helena is exactly like Carmichael's from Tristan da Cunha, and Kuhn follows the latter in regarding it as a distinct species.

CRYPTOGAMÆ.—CELLULARES.

MUSCI.[1]

Dicranella (§ Campylopodium) proscripta, Hornsch.

Dicranella (§ Campylopodium) proscripta, Hornsch. in Hor. Phys. Berol., p. 60, t. 12 (*Didymodon*); Mitt. in Melliss's St Hel., p. 357.

Leptotrichum hornschuchii, C. Müll., Synop. Musc. Frond., i. p. 450.

Dicranella cygnea, J. Angstr. in Hedwigia, 1875, p. 92.

St Helena.—Endemic. Common, and gathered by all collectors.

[1] Mainly extracted from Mitten's enumeration of the *Musci* and *Hepaticæ* in Melliss's St Helena.

Dicranella condensata, J. Angstr.

Dicranella condensata, J. Angstr., in Hedwigia, 1875, p. 92.

St Helena.

The description of this seems to indicate *Dicranella ascensionica*, Mitt.; but this species is absent in all our collections from St Helena.

Campylopus introflexus, Hedw.

Campylopus introflexus, Hedw., Sp. Musc., t. 20 (*Dicranum*); Mitt. in Melliss's St Hel., p. 358.

St Helena.—Damp banks on the high land—*Burchell; Melliss.*

A common moss both in the northern and southern hemispheres.

Campylopus helenicus, C. Müll.

Campylopus helenicus, C. Müll, Synop. Musc. Frond., ii. p. 599 (*Dicranum*); Mitt. in Melliss's St Hel., p. 358.

St Helena.—Endemic.

One of the commoner species, figuring in every collection.

Campylopus scabricuspis, Mitt.

Campylopus scabricuspis, Mitt. in Melliss's St Hel., p. 358.

St Helena.—Endemic. Damp roadside banks on the high land—*Melliss.*

Glyphomitrium helenicum, Mitt.

Glyphomitrium helenicum, Mitt. in Melliss's St Hel., p. 359.

St Helena.—Endemic.

Only collected by Captain Haughton.

Ceratodon purpureus, Linn.

Ceratodon purpureus, Linn. (*Mnium*); C. Müll., Synop. Musc. Frond., i. p. 646; Melliss, St Hel., p. 359.

St Helena. Damp banks on the high land—*Burchell; Melliss.*

The most widely diffused of all mosses.

Tortula crispula, Bruch.

Tortula crispula, Bruch. (*Trichostomum*); C. Müll., Synop. Musc. Frond., i. p. 571; Melliss, St Hel., p. 360.

St Helena.—Indigenous? Old walls and stones in the high land—*Melliss.*

Europe; North Africa.

Tortula cæspitosa, Schwægrichen.

Tortula cæspitosa, Schwægrichen, t. 31; Mitt. in Melliss's St Hel., p. 360.

St Helena.—Indigenous? Old stone walls on the high land—*Melliss.*

South America and South Africa.

Macromitrium (Macrocoma) microphyllum, Hooker.

Macromitrium (*Macrocoma*) *microphyllum*, Hooker et Greville in Brewster's Edinb. Journ., i. p. 121, t. 6 (*Orthotrichum*); Mitt. in Melliss's St. Hel., p. 360.

St Helena. *Melliss.*

South Africa; Australia; New Zealand.

Macromitrium (Goniostoma) urceolatum, Hooker.

Macromitrium (*Goniostoma*) *urceolatum*, Hooker, Musci Exotici, t. 124 (*Orthotrichum*); Mitt. in Melliss's St Hel., p. 360.

St Helena. *Menzies*, 1798; *Haughton*; *Melliss.*

South America; Juan Fernandez.

Macromitrium (Goniostoma) seemanni, Mitt.

Macromitrium (*Goniostoma*) *seemanni*, Mitt. in Journ. Linn. Soc. Lond., iii. Suppl., p. 51; and in Melliss's St Hel., p. 360.

St Helena.—Endemic? Summit of Diana's Peak, &c.—*Burchell*; *Seemann*; *Melliss.*

It is most probable that the specimen of this species from Dickson, marked as from the East Indies, and now preserved in the Kew Herbarium, was really gathered in St Helena.

Physcomitrium flexifolium, Mitt.

Physcomitrium flexifolium, Mitt. in Melliss's St. Hel., p. 361.

St Helena.—Endemic. Only collected by *Burchell.*

Bartramia (Philonitis) heleniana, Mitt.

Bartramia (*Philonitis*) *heleniana*, Mitt. in Melliss's St Hel., p. 361.

St Helena.—Endemic. Only collected by *Burchell.*

Very closely allied to, and perhaps not specifically different from, the common *Bartramia fontana.*

Specimens of another species were gathered by Mr Melliss, indicating a small species

with plumose foliage on stems less than half an inch high; but they are insufficient to afford any character.

Bryum argenteum, Linn.

Bryum argenteum, Linn., Sp. Pl., ed. 2, p. 1586; C. Müll., Synop. Musc. Frond., i. p. 314 (*β lanatum*); Melliss, St Hel., p. 362.

St Helena.

Generally diffused.

Two other species of *Bryum* exist in St Helena, but the specimens are insufficient for determination. One is near to the Brazilian *Bryum rigidum*, and the other may be one of the forms of the common *Bryum dichotomum*.

Hookeria (Omaliadelphus) pallidifolia, Mitt.

Hookeria (*Omaliadelphus*) *pallidifolia*, Mitt. in Melliss's St Hel., p. 362.

St Helena.—Endemic. Amongst the grass on the high land—*Hooker; Melliss.*

Sematophyllum (Rhaphidorrhynchum) helenicum, Mitt.

Sematophyllum (*Rhaphidorrhynchum*) *helenicum*, Mitt. in Melliss's St Hel., p. 363.

St Helena.—Endemic. On bark—*Melliss.*

Sematophyllum (Rhaphidorrhynchum) plumularium, Mitt.

Sematophyllum (*Rhaphidorrhynchum*) *plumularium*, Mitt. in Melliss's St Hel., p. 364.
Hypnum (*Sematophyllum*) *erythrocaulon*, J. Angstr. in Hedwigia, 1875, p. 92?.

St Helena.—Endemic. On bark—*Melliss.*

Pleurozium splendens, Hedwig.

Pleurozium splendens, Hedwig, Sp. Musc., p. 262, t. 67 (*Hypnum*); C. Müll., Synop. Musc. Frond. ii. p. 457; Melliss, St Hel., p. 364.

St Helena.—Indigenous?

Only collected in the island by Sir J. D. Hooker.

Generally diffused in the north temperate zone, and extending southward to the Canaries, &c.

Hypnum (Argyrodinum) purum, Linn.

Hypnum (*Argyrodinum*) *purum*, Linn., Sp. Pl., ed. 2, p. 1594; C. Müll., Synop. Musc. Frond., ii. p. 379; Melliss, St Hel., p. 364.

St Helena.—Indigenous? Among grass on the high land at Rock Cottage, &c.—*Melliss.*

Europe; North America.

Hypnum (Rhynchostegium) prælongum, Linn.

Hypnum (*Rhynchostegium*) *prælongum*, Linn., Sp. Pl. ed., p. 1591; C. Müll., Synop. Musc. Frond., ii. p. 446; Mitt. in Melliss's St Hel., p. 365.

St Helena.—Indigenous? Collected by *Haughton* and *Melliss*.

All over Europe; also in Madeira, South America, &c.

Hypnum (Brachythecium) athrocladum, Mitt.

Hypnum (*Brachythecium*) *athrocladum*, Mitt. in Melliss's St Hel., p. 365.

St Helena.—Endemic.

Only collected by *Burchell*.

Fissidens helenicus, Mitt.

Fissidens helenicus, Mitt. in Melliss's St Hel., p. 366, t. 56, fig. A.

St Helena.—Endemic. *Burchell; Haughton.*

This is perhaps the *Fissidens chioneurus*, C. Müll., in Linnæa, xxxvii. p. 167, a species described from a St Helena specimen.

HEPATICÆ.

Plagiochila insularis, Mitt.

Plagiochila insularis, Mitt. in Melliss's St Hel., p. 366.

St Helena.—Endemic. *Haughton; Melliss.*

Fragments of another species, like very small states of *Plagiochila spinulosa*, have been seen from St Helena.

Jungermannia obtusata, Tayl.

Jungermannia obtusata, Tayl. in Hook., Lond. Journ. Bot., 1845, p. 80; Mitt. in Melliss's St Hel., p. 367.

St Helena.—Endemic. *Hooker; Haughton.*

G. L. S. (Synop. Hepat., p. 664) reduces this to *Jungermannia subcomplicata*.

Lophocolea humistrata, Tayl.

Lophocolea humistrata, Tayl. in Hook., Lond. Journ. Bot., 1845, p. 82; Mitt. in Melliss's St Hel., p. 367.

St Helena.—Endemic. *Hooker; Haughton.*

Lophocolea bidentata, Nees.

Lophocolea bidentata, Nees, Hepat. Eur., ii. p. 327; G. L. S., Synop. Hepat., p. 159.

St Helena.—In large patches, but barren—*Mrs Wilde.*

Adelocolia decipiens, Mitt.

Adelocolia decipiens, Mitt., MSS.
Adelanthus decipiens, Hook., Brit. Jung., t. 50 (*Jungermannia*); Mitt. in Journ. Linn. Soc. Lond., vii. p. 244, et in Melliss's St Hel., p. 368.
Plagiochila decipiens, Mont. et Nees, Hepat. Eur., iii. p. 518; G. L. S., Synop. Hepat., p. 24.
Jungermannia campylodonta, Tayl. in Hook., Lond. Journ. Bot., 1845, p. 80.
Plagiochila campylodonta, G. L. S., Synop. Hepat., p. 639.

St Helena.—Indigenous? On moist ground, Diana's Peak—*Hooker;* creeping amongst *Macromitrium seemanni—Seemann.*

Ireland; North America; Andes of South America.

The name *Adelanthus* being previously in use, it has been necessary to alter it.

Tylimanthus anisodon, Tayl.

Tylimanthus anisodon, Tayl. in Hook., Lond. Journ. Bot., 1845, p. 79 (*Plagiochila*); Mitt. in Melliss's St Hel., p. 368.

St Helena.—Endemic. *Hooker.*

Lepidozia capillaris, Swartz.

Lepidozia capillaris, Swartz (*Jungermannia*); G. L. S., Synop. Hepat., p. 213; Mitt. in Melliss's St Hel., p. 369.
Lepidozia nemoides, Tayl. in Hook., Lond. Journ. Bot., 1845, p. 84.

St Helena. *Hooker; Haughton.*

West Indies; South Africa; New Zealand, &c.

Physiotium sphagnoides, Hooker.

Physiotium sphagnoides, Hooker, Musci Exotici, t. 47 (*Jungermannia*); G. L. S., Synop. Hepat., p. 235; Mitt. in Melliss's St Hel., p. 370.

St Helena. *Menzies; Burchell; Hooker; Melliss.*

West Africa; Mascarene Islands; Java.

Radula fulvifolia, Tayl.

Radula fulvifolia, Tayl. in Hook., Lond. Journ. Bot., 1845, p. 85; Mitt. in Melliss's St Hel., p. 370.

St Helena.—Endemic. *Hooker; Haughton; Melliss.*

Phragmicoma acutiloba, Tayl.

Phragmicoma acutiloba, Tayl. in Hook., Lond. Journ. Bot., 1845, p. 90; Mitt. in Melliss's St Hel., p. 370.

St Helena.—Endemic. Diana's Peak—*Hooker.*

Phragmicoma rotalis, Tayl.

Phragmicoma rotalis, Tayl. in Hook., Lond. Journ. Bot., 1845, p. 89; Mitt. in Melliss's St Hel., p. 371.

St Helena.—Endemic. *Hooker; Haughton; Seemann; Melliss.*

Phragmicoma microscypha, Tayl.

Phragmicoma microscypha, Tayl. in Hook., Lond. Journ. Bot., 1845, p. 90.

St Helena.—Endemic. *Hooker.*

Lejeunia pterota, Tayl.

Lejeunia pterota, Tayl. in Hook., Lond. Journ. Bot., 1845, p. 91; Mitt. in Melliss's St Hel., p. 371.

Lejeunia adscensionis, Tayl., l. c.

St Helena. *Hooker.*

Also in Ascension.

Pallavicinius procumbens, Tayl.

Pallavicinius procumbens, Tayl. in Hook., Lond. Journ. Bot., 1845, p. 93 (*Diplolæna*); Mitt. in Melliss's St Hel., p. 371.

St Helena.—Endemic. *Hooker; Haughton; Melliss.*

Plagiochasma limbatum, Tayl.

Plagiochasma limbatum, Tayl. in Hook., Lond. Journ. Bot., 1845, p. 95 (*Jungermannia*); Mitt. in Melliss's St Hel., p. 371.

St Helena. *Haughton.*

Also in Ascension.

Symphogyna serrata, Mitt.

Symphogyna serrata, Mitt. in Melliss's St Hel., p. 372.

St Helena.—Endemic. *Haughton.*

Exormotheca pustulosa, Mitt.

Exormotheca pustulosa, Mitt. in Godman, Nat. Hist. Azores, p. 325, et in Melliss's St Hel., p. 372.

St Helena. *Melliss.*

There is a little uncertainty about this being the same as the Azores plant.

Marchantia polymorpha, Linn.

Marchantia polymorpha, Linn.; G. L. S., Synop. Hepat., p. 522; Mitt. in Melliss's St Hel., p. 372.

St Helena.—Central ridge; abundant—*Melliss.*

Generally diffused.

Dendroceros adglutinatus, Tayl.

Dendroceros adglutinatus, Tayl. in Hook., Lond. Journ. Bot., 1845, p. 96 (*Monoclea*); Mitt. in Melliss's St Hel., p. 372.

St Helena.—Endemic. On trees, Diana's Peak—*Hooker; Burchell.*

Anthoceros lævis, Linn.

Anthoceros lævis, Linn.; G. L. S., Synop. Hepat., p. 586; Mitt. in Melliss's St Hel., p. 373.

St Helena. *Melliss.*

Widely dispersed.

LICHENES.[1]

COLLEMACEI.

Collemei.

Leptogium tremelloides, Fries.

Leptogium tremelloides, Fries; Nyl., Synop. Lich., i. p. 124; Leighton, Trans. Linn. Soc. Lond., xxvii. p. 155, et in Melliss's St Hel., p. 373.

St Helena. *Burchell; Melliss.*

Almost cosmopolitan, except in the colder regions.

LICHENACEI.

Cladoniei.

Cladonia pyxidata, Fries.

Cladonia pyxidata, Fries; Nyl., Synop. Lich., i. p. 192; Leighton in Trans. Linn. Soc. Lond., xxvii. p. 155, et in Melliss's St Hel., p. 373.

St Helena. *Burchell; Melliss.*

Mr Leighton enumerates three forms, namely, *denticulata*, *decorticata*, and *chlorophæa*, of which the two first are regarded by Nylander as distinct species.

Generally diffused both in the Northern and Southern Hemispheres.

Cladonia aggregata, Eschw.

Cladonia aggregata, Eschw.; Nyl., Synop. Lich., i. p. 218; Leighton in Trans. Linn. Soc. Lond., xxvii. p. 155, et in Melliss's St Hel., p. 373.

St Helena. *Burchell.*

[1] The whole of these lichens were collected by Burchell and Melliss, and the enumeration was originally published by the Rev. W. A. Leighton in the *Transactions of the Linnean Society of London* (xxvii. p. 155). Concerning the collections Mr Leighton says: "Though not numerous, they are highly interesting and instructive, as well from their insular locality itself, as more especially from their approximate similarity to the *Lichenes Amazonici et Andini.*"

Fragments only, and doubtfully belonging to this species.

West Indies; South America; Africa; Mascarene Islands; Southern Asia; Australia; New Zealand; and the Antarctic Islands.

ROCCELLEI.

Roccella tinctoria, DC.

Roccella tinctoria, DC.; Nyl., Synop. Lich., i. p. 258; Leighton in Trans. Linn. Soc. Lond., xxvii. p. 155, et in Melliss's St Hel., p. 373.

ST HELENA. *Melliss.*

Canary Islands; Senegambia; Cape of Good Hope; East India; Central and South America; and also in the islands of the Mediterranean Sea; but here, according to Nylander, represented by a form approaching *Roccella phycopsis*.

Roccella phycopsis, Acharius.

Roccella phycopsis, Acharius; Nyl., Synop. Lich., i. p. 259; Leighton in Trans. Linn. Soc. Lond., xxvii. p. 155, et in Melliss's St Hel., p. 373.

ST HELENA. *Burchell; Melliss.*

Mediterranean; Western Europe; Canaries; Ascension; Peru; and Madagascar.

Roccella fuciformis, Acharius.

Roccella fuciformis, Acharius; Nyl., Synop. Lich., i. p. 260; Leighton in Melliss's St Hel., p. 373.

ST HELENA. *Melliss.*

Mediterranean; Western Europe; Canaries; South America; Western and South Africa; and Mauritius.

USNEEI.

Usnea barbata, Fries.

Usnea barbata, Fries; Nyl., Synop. Lich., i. p. 267; Leighton in Trans. Linn. Soc. Lond., xxvii. p. 156, et in Melliss's St Hel., p. 374 (formæ: *florida*, *hirta*, *ceratina*, et *articulata*).

ST HELENA. *Burchell; Melliss.*

Generally diffused.

[*Usnea leucochlora*, Bory in Duperr. Voy. "Coquille," Bot. Crypt., p. 241, St Helena, Durville, is unknown to us.]

Usnea lævis, Nyl.

Usnea lævis, Nyl., Synop. Lich., i. p. 271; Leighton in Trans. Linn. Soc. Lond., xxvii. p. 271, et in Melliss's St Hel., p. 374.

ST HELENA. *Burchell.*

RAMALINEI.

Ramalina scopulorum, Acharius.

Ramalina scopulorum, Acharius; Nyl., Synop. Lich., i. p. 292; Leighton in Trans. Linn. Soc. Lond., xxvii. p. 156, et in Melliss's St Hel., p. 374.

ST HELENA. *Melliss.*

From Lapland and Iceland to the Cape of Good Hope; also in North America, China, New Zealand, &c.

Ramalina polymorpha, Acharius.

Ramalina polymorpha, Acharius; Nyl., Synop. Lich., i. p. 293; Leighton in Trans. Linn. Soc. Lond., xxvii. p. 156, et in Melliss's St Hel., p. 374.

ST HELENA. *Melliss.*

Widely diffused.

Ramalina pollinaria, Acharius.

Ramalina pollinaria, Acharius; Nyl., Synop. Lich., i. p. 296; Leighton in Trans. Linn. Soc. Lond., xxvii. p. 156, et in Melliss's St Hel., p. 374.

ST HELENA. *Burchell.*

Widely diffused.

Ramalina ceruchis, De Notaris.

Ramalina ceruchis, De Notaris; Nyl., Synop. Lich., i. p. 289; Leighton in Trans. Linn. Soc. Lond., xxvii. p. 156, et in Melliss's St Hel., p. 375.

ST HELENA. *Burchell.*

South America.

Ramalina angulosa, Laur.

Ramalina angulosa, Laur.; Leighton in Trans. Linn. Soc. Lond., xxvii. p. 156, et in Melliss's St Hel., p. 374 (*formæ* 3).

Ramalina scopulorum, var. *implexa*, Nyl., Synop. Lich., i. p. 293.

ST HELENA. *Burchell.*

South Africa.

STICTEI.

Stictina crocata, Nyl.

Stictina crocata, Nyl., Synop. Lich., i. p. 338; Leighton in Trans. Linn. Soc. Lond., xxvii. p. 156, et in Melliss's St Hel., p. 375.

ST HELENA. *Melliss.*

Very widely spread.

Stictina tomentosa, Nyl.

Stictina tomentosa, Nyl., Synop. Lich., i. p. 343; Leighton in Trans. Linn. Soc. Lond., xxvii. p. 156, et in Melliss's St Hel., p. 375.

St Helena. *Burchell; Melliss.*

Sticta aurata, Acharius.

Sticta aurata, Acharius; Nyl., Synop. Lich., i. p. 361; Leighton in Trans. Linn. Soc. Lond., xxvii. p. 156, et in Melliss's St Hel., p. 375.

St Helena. *Burchell; Melliss.*

Very widely spread.

Ricasolia herbacea, De Notaris.

Ricasolia herbacea, De Notaris; Nyl., Synop. Lich., i. p. 369; Leighton in Trans. Linn. Soc. Lond., xxvii. p. 156, et in Melliss's St Hel., p. 375.

St Helena. *Burchell.*

Specimen fragmentary, and uncertain as to the species.

Widely spread.

Parmeliei.

Parmelia saxatilis, Acharius.

Parmelia saxatilis, Acharius; Nyl., Synop. Lich., i. p. 388; Leighton in Trans. Linn. Soc. Lond., xxvii. p. 156, et in Melliss's St Hel., p. 376.

St Helena. *Burchell; Melliss.*

Widely spread.

Parmelia perlata, Acharius.

Parmelia perlata, Acharius; Nyl., Synop. Lich., i. p. 379; Leighton in Trans. Linn. Soc. Lond., xxvii. p. 156, et in Melliss's St Hel., p. 375.

St Helena. *Melliss.*

Cosmopolitan, except in the colder regions.

Parmelia lævigata, Acharius.

Parmelia lævigata, Acharius; Nyl., Synop. Lich., i. p. 384; Leighton in Trans. Linn. Soc. Lond., xxvii. p. 156, et in Melliss's St Hel., p. 376.

St Helena. *Burchell.*

Cosmopolitan, except in the colder regions.

Parmelia caperata, Acharius.

Parmelia caperata, Acharius; Nyl., Synop. Lich., i. p. 376; Leighton in Melliss's St Hel. p. 376.

St Helena. *Melliss.*

Widely spread.

Parmelia conspersa, Acharius, forma *mougeotii*.

Parmelia conspersa, Acharius; Nyl., Synop. Lich., i. p. 391 et 392; Leighton in Melliss's St Hel., p. 376 (forma *mougeotii*).

St Helena. *Melliss.*

Very widely diffused. Nylander regards this form as a distinct species.

Parmelia incurva, Fries?

Parmelia incurva, Fries?; Nyl., Synop. Lich., i. p. 394; Leighton in Melliss's St Hel., p. 376.

St Helena. *Melliss.*

Europe; North America.

Parmelia hyperopta, Acharius?

Parmelia hyperopta, Acharius?; Leighton in Melliss's St Hel., p. 376.

St Helena. *Melliss.*

Parmelia hyperopta. Acharius, is reduced to *Parmelia ambigua* by Fries (Lich. Europ., p. 71), which Nylander now refers to the genus *Squamaria*.

Parmelia lepidiota, Smrf.

Parmelia lepidiota, Smrf.; Leighton in Melliss's St Hel., p. 376.

St Helena. *Melliss.*

Physciei.

Physcia flavicans, DC.

Physcia flavicans, DC.; Nyl., Synop. Lich., i. p. 406; Leighton in Trans. Linn. Soc. Lond., xxvii. p. 156, et in Melliss's St Hel., p. 376.

St Helena. *Burchell; Melliss.*

Widely dispersed.

Physcia leucomela, Michx., forma *angustifolia*.

Physcia leucomela, Michx.; Nyl., Synop. Lich., i. p. 414; Leighton in Trans. Linn. Soc. Lond., xxvii. p. 156, et in Melliss's St Hel., p. 376 (forma *angustifolia*).

St Helena. *Burchell; Melliss.*

Widely spread.

Physcia speciosa, Fries, var. *hypoleuca*.

Physcia speciosa, Fries; Nyl., Synop. Lich., i. p. 416; Leighton in Trans. Linn. Soc. Lond., xxvii. p. 156, et in Melliss's St Hel., p. 376 (var. *hypoleuca*).

St Helena. *Burchell.; Melliss.*

This variety is widely dispersed, especially in warm regions.

Physcia astroidea, Fries.

Physcia astroidea, Fries; Nyl., Synop. Lich., i. p. 426; Leighton in Melliss's St. Hel., p. 376.

St Helena. *Melliss.*

Central and Southern Europe, and North Africa.

Physcia picta, Nyl.

Physcia picta, Nyl., Synop. Lich., i. p. 430; Leighton in Trans. Linn. Soc. Lond., xxvii. p. 157, et in Melliss's St. Hel., p. 376.

St Helena.—*Melliss.*

Widely spread.

Lecanorei.

Pannaria rubiginosa, Del.

Pannaria rubiginosa, Del.; Leighton in Trans. Linn. Soc. Lond., xxvii. p. 157, et in Melliss's St Hel., p. 376.

St Helena. *Burchell; Melliss.*

Very widely spread.

Erioderma unguigerum, Fée.

Erioderma unguigerum, Fée; Leighton in Trans. Linn. Soc. Lond., xxvii. p. 157, et in Melliss's St Hel., p. 377.

St Helena. *Burchell; Melliss.*

Burchell's St Helena specimens of this lichen in Kew Herbarium are named *Erioderma polycarpum* in the handwriting of Leighton; and one collected by Sir J. D. Hooker is named *Erioderma unguigerum* by Nylander.

Cora pavonia, Web.

Cora pavonia, Web.; Leighton in Trans. Linn. Soc. Lond., xxvii. p. 157, et in Melliss's St Hel., p. 377.

St Helena. *Burchell; Melliss.*

West Indies; South America.

Squamaria saxicola, Nyl.

Squamaria saxicola, Nyl., Prodr., p. 70, et. Lich. Scand., p. 133; Leighton in Melliss's St Hel., p. 377.

St Helena. *Melliss.*

Widely spread in the Northern Hemisphere.

Placodium murorum, DC.?

Placodium murorum, DC., Fl. Fr., ii. p. 378? Leighton in Melliss's St Hel., p. 377.

St Helena. *Melliss.*

A widely dispersed lichen.

Lecanora personata, Leighton.

Lecanora personata, Leighton in Trans. Linn. Soc. Lond., xxvii. p. 157, t. 35, et in Melliss's St Hel., p. 377.

St Helena.—Endemic. *Burchell.*

Lecanora aurantiaca (Lightf.)

Lecanora aurantiaca (Lightf.); Leighton in Trans. Linn. Soc. Lond., xxvii. p. 157, et in Melliss's St Hel., p. 377.

St Helena. *Melliss.*

Widely spread.

Lecanora atra, Acharius?

Lecanora atra, Acharius, Lich. Univ., p. 344, et Synop. Lich., p. 143? Leighton in Melliss's St Hel., p. 377.

St Helena. *Melliss.*

A cosmopolitan species.

Lecanora ferruginea, Nyl.?

Lecanora ferruginea, Nyl., Prodr., p. 76, et Lich. Scand., p. 143? Leighton in Melliss's St Hel., p. 377.

St Helena. *Melliss.*

Widely spread.

Lecanora argopholis, Acharius.

Lecanora argopholis, Acharius, Lich. Univ., p. 346; Leighton in Melliss's St Hel., p. 377.

St Helena. *Melliss.*

Europe; America; New Zealand.

Lecanora orosthea, Acharius.

Lecanora orosthea, Acharius, Lich. Univ., p. 400; Nyl. Lich. Scand., p. 165; Leighton in Melliss's St Hel., p. 377.

St Helena. *Melliss.*

Europe.

Lecanora hæmatomma, Acharius.

Lecanora hæmatomma, Acharius, Lich. Univ., p. 388, et Synop. Lich., p. 178; Leighton in Melliss's St Hel., p. 378.

St Helena. *Melliss.*

Widely dispersed.

Lecanora fuscolutea, Dicks.

Lecanora fuscolutea, Dicks., Br. Crypt., ii. p. 18; Nyl. Lich. Scand., p. 146; Leighton in Melliss's St Hel., p. 378.

St Helena. *Melliss.*

Widely dispersed.

Pertusaria fallax, Pers.

Pertusaria fallax, Pers. in Acharius Synop. Lich., p. 110; Leighton in Melliss's St Hel., p. 378.

St Helena. *Melliss.*

Europe; Atlantic Islands.

Thelotremei.

Urceolaria scruposa, Acharius.

Urceolaria scruposa, Acharius, Meth. Lich., p. 147, et Lich. Univ., p. 338; Leighton in Melliss's St Hel., p. 378.

St Helena. *Melliss.*

Cosmopolite.

Lecidei.

Lecidea approximans, Leight.

Lecidea approximans, Leighton in Trans. Linn. Soc. Lond., xxvii. p. 157, t. 35, et in Melliss's St Hel., p. 378.

St Helena.—Endemic. *Burchell.*

Lecidea lactescens, Leight.

Lecidea lactescens, Leighton in Trans. Linn. Soc. Lond., xxvii. p. 157, t. 35, et in Melliss's St Hel., p. 378.

St Helena.—Endemic. *Burchell.*

Lecidea saxatilis, Nyl. ?

Lecidea saxatilis, Nyl., Lich. Scand., p. 237 ? Leighton in Melliss's St Hel., p. 378.

St Helena. *Melliss.*

Lecidea enteroleuca, Acharius.

Lecidea enteroleuca, Acharius, Lich. Univ., p. 177, et Synop. Lich., p. 19; Leighton in Melliss's St Hel., p. 378.

St Helena. *Melliss.*

Europe, &c.

Opegrapha leightonii, Cromb.

Opegrapha leightonii, Crombie in Leight. Lich. Fl. Brit., p. 409; Leighton in Melliss's St Hel., p. 378.

St Helena. *Melliss.*

Europe, &c.

Lepraria ochracea, T. & B.

Lepraria ochracea, T. & B.; Leighton in Melliss's St Hel., p. 379.

St Helena. *Melliss.*

Europe, &c.

Lepraria flava, Acharius.

Lepraria flava, Acharius, Lich. Univ., p. 663, et Meth. Lich., p. 180; Leighton in Melliss's St Hel., p. 379.

St Helena. *Melliss.*

FUNGI.

HYMENOMYCETES.

Agaricus (Amanita) pantherinus, DC.

Agaricus (Amanita) pantherinus, DC., Fl. Fr., vi. p. 52; Fries, Hymen. Europ., p. 21; Berkl. in Melliss's St Hel., p. 379.

St Helena. *Melliss.*

Europe; North America.

Agaricus (Psalliota) campestris, Linn.

Agaricus (Psalliota) campestris, Linn., Sp. Pl., 2d ed., p. 1641; Fries, Hymen. Europ., p. 279; Berkl. in Melliss's St Hel., p. 379.

St Helena.—Abundantly on the grassy plains at Deadwood, Man and Horse, New Ground, &c.—*Melliss.*[1]

North and south temperate regions; also from Ceylon, Java, Guiana, and Brazil.

[1] Melliss mentions that a larger species of *Agaricus* inhabits the rotting beds of haystacks; and a still larger one, about eight or ten inches in diameter, is occasionally met with on the barren plains between Longwood and Turk's Cap.

Agaricus (Hypholoma) fascicularis, Huds.

Agaricus (Hypholoma) fascicularis, Huds., Fl. Angl., 2d ed., p. 615; Fries, Hymen. Europ. p. 291?, Berkl. in Melliss's St Hel., p. 379.

St Helena. *Melliss.*

The true plant is widely dispersed in both north and south temperate regions.

Schizophyllum commune, Fries.

Schizophyllum commune, Fries, Syst. Mycol., i. p. 330; Berkl. in Melliss's St Hel., p. 380.

St Helena. *Melliss.*

Ubiquitous.

Polyporus lucidus, Fries.

Polyporus lucidus, Fries, Hymen. Europ., p. 536; Berkl. in Melliss's St Hel., p. 380.

St Helena.—Without locality—*Melliss.*

A cosmopolitan species.

Polyporus sanguineus, Mey.?

Polyporus sanguineus, Mey., Esseq., p. 304; Fries, Syst. Mycol., i. p. 371?; Berkl. in Melliss's St Hel., p. 380.

St Helena. *Melliss.*

Specimen quite colourless from exposure to weather.

Polyporus (Anodermei) induratus, Berkl.

Polyporus (Anodermei) induratus, Berkl. in Melliss's St Hel., p. 380, t. 56.

St Helena.—Endemic. Abundant on the trunks of trees that lie rotting on the high land at 1600 to 2000 feet—*Melliss.*

"Pileo ungulato e tomentoso pallide sublaccato, poris elongatis albis minutis angulatis, dissepimentis tenuibus, contextu fibroso-sericeo."

Polyporus versicolor, Fries.

Polyporus versicolor, Fries, Syst. Mycol., i. p. 368; Hymen., Europ., p. 568; Berkl. in Melliss's St Hel., p. 380.

St Helena.—Without locality—*Melliss.*

This is a European species, and it is also recorded from India, Siberia, United States, Mexico, Cuba, Guadaloupe, Brazil, Juan Fernandez, Cape of Good Hope, New Zealand, Tasmania, Australia, and Java.

GASTEROMYCETES.

Phallus impudicus, Linn. ?

Phallus impudicus, Linn. ? Berkl. in Melliss's St Hel., p. 379.

St Helena.—This stinking fungus is often met with after heavy rains forcing its way out of the earth in the wooded parts on the high land"—*Melliss.*

Scleroderma vulgare, Fries.

Scleroderma vulgare, Fries, Syst. Mycol., iii. p. 46; Berkl. in Melliss's St. Hel., p. 380.

St Helena.—Very common on the high land, along roadside banks, and in the wooded parts—*Melliss.*

Europe; North America; Madeira; New Zealand; Tasmania.

ASCOMYCETES.

Xylaria mellissii, Cooke.

Xylaria mellissii, Cooke, Grevillea, xi. p. 85.
Hypoxylon mellissii, Berkl. in Melliss's St Hel., p. 379.

St Helena.—Endemic. On the decaying trunk of an old cork tree, the Hermitage—*Melliss.*

ALGÆ.

MELANOSPERMEÆ.[1]

DICTYOTACEÆ.

Padina pavonia, Gaill.

Padina pavonia, Gaill.; Dickie in Journ. Linn. Soc. Lond., xiii. p. 178; Melliss, St Hel., p. 383.

St Helena.—From the basaltic rocks and small shallow pools of sea-water on Lot's Wife beach, on the windward side of the island—*Melliss.*

Generally spread.

[1] Dr Dickie states (*Journ. Linn. Soc. Lond.*, xiii. p. 178) that Mr Melliss sent him the root and part of the stem of a large species several feet in length, which is cast ashore in a battered condition on the southern side of the island. From its structure Dr Dickie supposed it to be the *Ecklonia buccinalis*, Hornem., a common species at the Cape of Good Hope, whence it doubtless drifted to St Helena, as a strong current prevails from that part.

RHODOSPERMEÆ.

LAURENCIACEÆ.

Laurencia cruciata, Harv.

Laurencia cruciata, Harv. ex Dickie in Journ. Linn. Soc. Lond., xiii. p. 179; Melliss, St Hel., p. 383.

ST HELENA.—Growing in the shallow pools on the windward coast; not common—*Melliss.*

Besides those from St Helena, we have only seen specimens of this species from Freemantle, West Australia, and Howick Islands, Queensland; but it is nearly allied to *Laurencia obtusa*, Lamour., a very widely diffused species.

CORALLINACEÆ.

Corallina carinata, Kütz.

Corallina carinata, Kütz. ex Dickie in Journ. Linn. Soc. Lond., xiii. p. 179; Melliss, St Hel., p. 383.

ST HELENA.—Shallow pools—*Melliss.*

Cape of Good Hope; Rio Janeiro.

Amphiroa fragilissima, Lamour.

Amphiroa fragilissima, Lamour.; Dickie in Journ. Linn. Soc. Lond., xiii. p. 179; Melliss, St Hel., p. 382.

ST HELENA.—Very rare in the pools at Lot's Wife ponds—*Melliss.*

This species has a wide distribution.

Amphiroa exilis, Harv.?

Amphiroa exilis, Harv.? Dickie in Journ. Linn. Soc. Lond., xiii. p. 179; Melliss, St Hel., p. 382.

ST HELENA.—Rare in shallow pools on the windward coast—*Melliss.*

We have only seen specimens of this species from Rio Janeiro, but Dickie states that it occurs at the Cape of Good Hope and in the Mediterranean.

Lithothamnion crassum, Philippi.

Lithothamnion crassum, Philippi in Wiegm. Arch., 1837, p. 389; Dickie in Journ. Linn. Soc., Lond., xiii. p. 179; Melliss, St Hel., p. 382.

Spongites racemosa, Kütz., Phyc. Gener., p. 386, t. 78, fig. 3, et Sp. Alg., p. 698.

ST HELENA.—Found with the next, but neither species is abundant—*Melliss.*

Only recorded from the Mediterranean and Adriatic.

Lithothamnion brassica-florida, Harv.

Lithothamnion brassica-florida, Harv. ex Dickie in Journ. Linn. Soc. Lond., xiii. p. 179; Melliss, St Hel., p. 382.

St Helena.—Growing to some extent in the shallow pools, and also cast up with the shingle on the beach along the southern or windward coast. It is a good deal perforated by a small *Lithodomus*, the shells of which are found perfect in some of the holes—*Melliss.*

Also found in Algoa Bay.

Melobesia farinosa, Lamour.

Melobesia farinosa, Lamour., Polyp. Flex., p. 315, t. 12; Kütz., Sp. Alg., p. 696; Dickie in Journ. Linn. Soc. Lond., xiii. p. 179; Melliss, St Hel., p. 382.

St Helena.—Found adhering to *Laurencia cruciata*—*Melliss.*

Widely spread in the Atlantic and Pacific; also in the Mediterranean, and on the coast of Eastern Australia.

Gelidiaceæ.

Pterocladia lucida, R. Br.

Pterocladia lucida, R. Br. ex J. G Agardh, Sp. Alg., iii. p. 545; Harv., Phyc. Austr., t. 248; Dickie in Journ. Linn. Soc. Lond., xiii. p. 170; Melliss, St Hel., p. 382.

St Helena.—Growing on limpet shells, which are cast ashore rather plentifully along the coast—*Melliss.*

Common on the western and south-western and eastern coasts of Australia and New Zealand; also occurring on the coast of Ceylon. The specimens from St Helena are very small, only about an inch high; but Dr Dickie states that there is doubt as to the genus or species.

Helminthocladeæ.

Liagora viscida, K. A. Agardh.

Liagora viscida, K. A. Agardh, Sp. Alg., i. p. 395; Kütz., Sp. Alg., p. 538; Dickie in Journ. Linn. Soc. Lond., xiii. p. 180; Melliss, St Hel., p. 382.

St Helena.—In shallow pools on the windward coast; rare—*Melliss.*

Azores; Mediterranean; Red Sea; Ceylon; Mauritius; Eastern Australia; West Indies.

Galaxaura lapidescens, Lamour.

Galaxaura lapidescens, Lamour.; Dickie in Journ. Linn. Soc. Lond., xiii. p. 180; Melliss, St Hel., p. 381.

St Helena.—Shallow pools; rare—*Melliss.*

Atlantic; Polynesia; Sandwich Islands; Mauritius.

Cryptonemiaceæ.

Grateloupia filicina, K. A. Agardh.

Grateloupia filicina, K. A. Agardh, Sp. Alg., i. p. 223; Kütz., Sp. Alg., p. 730; Dickie in Journ. Linn. Soc. Lond., xiii. p. 180; Melliss, St Hel., p. 381.

St Helena.—Rather common—*Melliss.*

Both the ordinary form and the var. *ramentacea* occur.

Generally diffused.

Ceramiaceæ.

Centroceras clavulatum, J. G. Agardh.

Centroceras clavulatum, J. G. Agardh, Sp. Alg., ii. p. 148; Dickie in Journ Linn. Soc. Lond., xiii. p. 180; Melliss, St Hel., p. 381.

St Helena.—Found adhering to *Corallina carinata*—*Melliss.*

Generally diffused.

Griffithsia setacea, K. A. Agardh.

Griffithsia setacea, K. A. Agardh, Sp. Alg., ii. p. 129; Kütz., Sp. Alg., p. 660; Dickie in Journ. Linn. Soc. Lond., xiii. p. 180; Melliss, St Hel., p. 381.

St Helena.—Adhering to *Laurencia cruciata*—*Melliss.*

Eastern North Atlantic; Mediterranean; New Zealand; Tasmania.

CHLOROSPERMEÆ.

Siphonaceæ.

Codium tomentosum, K. A. Agardh.

Codium tomentosum, K. A. Agardh, Sp. Alg., i. p. 452; Dickie in Journ. Linn. Soc. Lond., xiii. p. 180; Melliss, St Hel., p. 381.

St Helena.—In pools on the windward coast; very rare—*Melliss.*

Generally diffused.

Valoniaceæ.

Valonia verticillata, Kütz.

Valonia verticillata, Kütz., Sp. Alg., p. 508? Dickie in Journ. Linn Soc. Lond., xiii. p. 181; Melliss, St Hel., p. 381.

St Helena.—Rare in pools—*Melliss.*

Mr Moseley collected the typical plant in the Cape Verde Islands; Kützing states that it is found "ad insulam Sanctæ Crucis," which by a slip is given as Vera Cruz by Dickie, whom Melliss follows.

ULVACEÆ.

Ulva latissima, Kütz.

Ulva latissima, Kütz.; Dickie in Journ. Linn. Soc. Lond., xiii. p. 181; Melliss, St Hel., p. 380.

ST HELENA.—Very common on the shores of the island—*Melliss.*

Very widely spread.

Ulva parvula, Kütz.

Ulva parvula, Kütz., Sp. Alg., p. 474?; Melliss, St Hel., p. 380.

ST HELENA.—Rare; adhering to *Laurencia cruciata*—*Melliss.*

The original *Ulva parvula* is from the Mediterranean. Dickie does not include this in his enumeration.

Enteromorpha, sp. ?

Enteromorpha, sp.? Dickie in Journ. Linn. Soc. Lond., xiii. p. 181; Melliss, St Hel., p. 380.

ST HELENA.—Adhering to *Laurencia cruciata*—*Melliss.*

"Structure evidently the same as that of *Enteromorpha percursa*, J. G. Agardh, but too imperfect for identification."—*Dickie.*

SOUTH TRINIDAD.

INTRODUCTORY NOTES.

TRINIDADE, or South Trinidad, as it is designated, for the sake of distinction, in this work, is a rocky, mountainous island of volcanic origin, about three miles in extreme length and less than a mile and a quarter across at its widest part. It is situated in the South Atlantic, in lat. 20° 30′ S. and long. 29° 22′ W., or about 600 miles from the coast of Brazil. A range of hills traverses it lengthwise, and this central ridge slopes gently towards the coast on the northeast side, while on the southwest side a number of spurs jut out from it to the sea, with alternating valleys or plateaus; and the highest point slightly exceeds 2000 feet.

The botany of this solitary island is still very imperfectly known, but it is to be hoped that the day is not far distant when it will be thoroughly investigated, for the little that is known indicates a most interesting flora. Apparently the only botanist who has ever set foot on the island is Sir Joseph D. Hooker. This happened on Sir James Ross's outward voyage to the Antarctic regions, but no stay was made. A party landed in Northwest Bay, where, however, it was impossible to scale the cliffs, and the only botanical results of the trip were two sedges, a grass, and a fern. The inability to reach the interior was particularly disappointing, as tree-ferns and other arboreous vegetation were seen by the aid of a telescope from the ship. From that date (1839) until 1874, when Dr Ralph Copeland made an excursion into the interior of South Trinidad, nothing further seems to have been done towards exploring the island.

Dr Copeland, of the Dunecht Observatory, Aberdeen, was attached to the expedition that went out in the "Venus" to observe the transit of the planet Venus; and he had the good fortune to land at a point whence he could get into the interior. A report of this visit has been published,[1] together with the names of the few plants collected by him. The following notes, while embodying some of our own observations on the plants, is essentially the substance of Dr Copeland's report.

The island was approached from the northwest, where a number of frigate-birds and red geese were encountered, and some were shot. A fine view was obtained of the "Nine-Pin" or "Monument," a basaltic, tower-like rock, about 150 feet in diameter and 820 feet

[1] Abhandlungen des naturwissenschaftlichen Vereines zu Bremen, vii.

high, with quite perpendicular sides. It was a little north of this where Sir James Ross's party landed. According to earlier reports, Dr Copeland states, the summit of this rock was clothed with tall green trees, but they have now disappeared. Tall trees would seem to be rather out of place in such a situation, and we may be excused for doubting the correctness of such a report.

As they sailed along the western side of the island the coast was carefully scanned through a telescope in order to find a landing-place, and a boat was sent exploring for the same purpose; but it was found to be almost impossible to land, and the anchorage was bad. Nevertheless, Dr Copeland and a companion succeeded in getting on some projecting rocks about a third of a mile south of West Point, and after some climbing on this extremely rugged volcanic cliff, they reached the mainland, where they met with innumerable small yellow land-crabs and a tufted sedge. They had hardly landed, however, before they were obliged to take to their boat and return to the ship. All along this side of the island not a single living tree was to be seen in the lower part, though the higher ridges of the hills were covered with a dense forest, which was inhabited by an enormous number of boobies. Many of the trees were palm-like, and probably tree-ferns; but although the "Challenger Instructions" had informed them of the presence of tree-ferns, they were by no means prepared to find them in such abundance and in such development as afterwards turned out to be the case.

The next day the ship rounded the north point, and the whole of the east coast appeared in view. Here naked cliffs overtop the broad green slopes, in striking contrast to the barren shores and wooded summits of the western side. The east coast is divided into three shallow bays, and at first sight looks very favourable for landing; but near, and parallel to, the shore there is a narrow reef, running apparently from end to end. At length a small opening was found in the second bay through which a boat could enter, and where there was no difficulty in landing and drawing the boat up.

The country did not gain on closer inspection, for the green slopes that seemed at a distance to be carpeted with a grassy turf, were completely overgrown by one species of bean, *Canavalia* sp. (probably *Canavalia gladiata*, DC.), whose entangled branches rendered walking very uncomfortable. Moreover, the ground was everywhere burrowed by innumerable land-crabs, the whole country literally swarming with them.

Accompanied by one sailor, Dr Copeland made for the high land of the interior, passing through on his way and examining the ruins of some huts built by a party of Portuguese, who attempted, previously to 1803, to form a settlement there. No traces of cultivated plants were found, but everything was overrun by the *Canavalia* mentioned above. Dr Copeland ascended a ravine formed by a rivulet that flows into the bay below. Large numbers of frigate-birds were found nesting in prostrate dead trees.

It is noteworthy that although most of the valleys on the eastern side of the island contained enormous numbers of dead trees, not a single living one was seen except near

the highest points. Indeed, nearly all the trees were overturned, and had the appearance of having been in that position for many years. Dr Copeland asks whether, as in St Helena, the trees were not destroyed by goats. It may be so; but neither he nor any one from the ship saw a single goat, hog, or cat; yet dense vegetation was encountered in easily accessible localities. In 1803 the American Commodore Amaco Delano visited the island, and found, it is recorded, numerous goats and hogs, as well as cats. Sir James Ross's party saw one goat only in 1839, and left two hens and a cock; but they do not seem to have multiplied, for Dr Copeland saw fowl of no kind.

The wood of the fallen trees is said to resemble mahogany, though of less density.

At an altitude of about 1800 feet, the valley suddenly widens into a kind of plateau, covered for the greater part with a dense thicket of a matted grass [sedge ?]. This grass is borne on tough stems one or two inches high, so that the heavy rains that doubtless fall easily run off beneath it.

Contiguous to a small watercourse was a group of tree-ferns, many of them dead, however, though their snake-like trunks were still standing upright; and at some two or three hundred feet higher the vegetation was found to be of quite a different character. Large spaces of ground were clothed with luxuriant ferns, each kind growing in separate patches. These ferns were: *Polypodium lepidopteris*, *Asplenium præmorsum*, and *Asplenium compressum*. The last was less plentiful than the others, but it is the most interesting, inasmuch as it had previously only been found in St Helena. Intermixed with the ferns were clumps of a small shrubby *Composite* plant (*Achyrocline disjuncta*),[1] covered with yellowish-white flower-heads. The summit above, as well as the southwestern slope, was covered with forest, the outskirts of which were very dense, consisting of stunted, almost impenetrable bushes. Looking down into the principal western valley, in which there is a waterfall, a pretty sight met the eye. The valley was nearly filled with tree-ferns, which, seen from above, showed each about eight fronds; and as the trees were all of the same size, with their fronds just meeting each other, the whole formed the most beautiful carpet imaginable. Near the summit a few tree-ferns were associated with the trees forming the bulk of the forest; their trunks were about a foot in girth and from eight to fourteen feet high.

An imperfect specimen of a tree-fern was brought home from here, and it has been described as a new species of *Cyathea*, namely, *Cyathea copelandi*.

Unfortunately Dr Copeland brought away only very fragmentary specimens of a few plants, as night overtook him almost before he could descend to the coast. One thing seems tolerably clear, and that is, the vegetation, luxuriant and abundant though it is in some parts, presents the common characteristics of insular floras, being composed of comparatively few species.

[1] Referred to as *Achyrocline capitata* in Dr Copeland's sketch, from which, however, it is quite distinct, though it resembles that species in general appearance.

Tabular View of all the Vascular Plants at present known from South Trinidad.

Species.	Distribution.
Canavalia gladiata?	Everywhere in the Tropics.
Abatia sp.	The genus restricted to Tropical South America.
Eugenia sp.	A large and widely dispersed genus, abundantly represented in Brazil.
Achyrocline disjuncta	Species endemic. Genus in Africa and America.
Alternanthera paronychioides	Widely dispersed in Tropical America.
Ricinus communis	Now general in warm countries.
Cyperus atlanticus	Species endemic. Genus widely spread.
Fimbristylis nesiotis	" " " "
Sporobolus virginicus	Littoral, and widely dispersed.
Cyathea copelandi	Species endemic. Genus widely spread.
Asplenium furcatum	Widely diffused in warm countries.
Asplenium compressum	Elsewhere only in St Helena.
Polypodium lepidopteris	Common in Tropical America.

The foregoing fragment of the flora of South Trinidad offers little for comment; but assuming it to be an average sample, it indicates a recent origin in comparison with the flora of St Helena. Out of thirteen species, twelve belong to widely-dispersed genera, and the thirteenth to a genus peculiar to South America. All the genera except this one (*Abatia*) are represented on the opposite coast of Africa. Only one genus (*Asplenium*) is represented by more than one species, and four of the species at least are apparently endemic. The presence of *Asplenium compressum* in the island is the most noteworthy fact that Dr Copeland's visit has brought to light. It is to be hoped that the first opportunity will be taken advantage of to thoroughly investigate the natural history of this island. The goats and hogs left on the occasion of Halley's visit in 1700, when the island was taken possession of in the name of the King of England, seem to have multiplied at first, for, as has already been mentioned, Commodore Amaco Delano reports them as being numerous at the beginning of the present century; but they have since died out, probably in consequence of the failure of food. It may be, too, that before they died out they extirpated some of the native plants.

In 1781 a party of English under Commodore Johnstone attempted a settlement in the island, but after two or three months' sojourn they abandoned it as impracticable. A few years later some Portuguese made a similar attempt and failed.

Since the foregoing was put into print, we have had an opportunity of perusing E. F. Knight's "Cruise of the Falcon," in which the author gives a graphic narrative of a perilous and toilsome exploration of the island of South Trinidad, accompanied by his Italian sailor-cook and an English lad of seventeen. Mr Knight is not a naturalist, but being endowed with uncommon powers of observation, and possessing a facile pen and pencil, we are able to glean some definite information from his sparkling book. He and his companions first landed in a cove in South-West Bay, where they ineffectually attempted

to reach the interior of the island, though they climbed the cliffs to a considerable height. Concerning this part, Mr Knight says :—

"What struck us as remarkable was, that though in this cove there was no live vegetation of any kind, there were traces of an abundant extinct vegetation. The mountain slopes were thickly covered with dead wood—wood, too, that had evidently long since been dead; some of these leafless trunks were prostrate, some still stood up as they had grown; many had evidently been trees of considerable size, bigger round than a man's body. They were rotten, brittle, and dry, and made glorious fuel. This wood was close-grained, of a red colour, and much twisted. When we afterwards discovered that over the whole of this extensive island, from the beach up to the summit of the highest mountain —at the bottom and on the slopes of every now barren ravine, on whose loose rolling soil no vegetation could possibly take root—these dead trees were strewed as closely as is possible for trees to grow, and when we further perceived that they all seemed to have died at one and the same time, as if plague-struck, and that not one single live specimen, young or old, was to be found anywhere, our amazement was increased. At one time, Trinidad must have been one magnificent forest, presenting to passing vessels a far different appearance to that it now does. The descriptions given in the Directory allude to these forests; therefore whatever catastrophe it may have been that killed off all the vegetation of the island, it must have occurred within the memory of man. Looking at the rotten, broken-up condition of the rock, and the nature of the soil, where there is soil—a loose powder, not consolidated like earth, but having the appearance of fallen volcanic ash—I could not help imagining that some great eruption had brought about all this desolation."

Land-crabs, and various kinds of sea-birds, were there in myriads, as indeed in all parts of the island. Afterwards the party landed in another part of South-West Bay, whence they proceeded to the summit of the mountain, encountering at first no living vegetation except a wiry grass, which was succeeded by dwarf ferns, and then on the higher parts they walked through groves of tree-ferns. The north-west coast was only reached after some privations and dangerous climbing, and one night spent amid the horrors of "millions" of land-crabs. From the few words of description given, Mr Knight seems to have met with most of the plants collected by Dr Copeland, and one purslane (*Portulaca*) not seen apparently by the latter. The plant "whose name I know not, spreading far and wide with rope-like creepers, bearing large leaves and pink flowers, and a bean about the size of a haricot," was doubtless the *Canavalia* collected by Dr Copeland; and the shrub-like myrtle on the summit, which Knight "satisfied himself was not the young growth of the species of tree, whose dead specimens were strewn over the whole island," perhaps the same species of *Eugenia*. Beyond the organisms mentioned, there was no life, "not even insect." The ravine by which Knight and his party finally succeeded in reaching the north-east coast was in all probability the same as that ascended by Copeland, for he says it was clear that no other route lay from that side up the mountains. On reaching the coast, they bore southward until they arrived at the most southerly point of the island, where they were obliged to retrace their steps. No other plants were seen; and it is evident that very few species of vascular plants exist on the island, perhaps not half a dozen more than are accounted for in this work.

ENUMERATION OF THE PLANTS.

PHANEROGAMÆ.—DICOTYLEDONES.

LEGUMINOSÆ.

Canavalia sp.

Canavalia sp., *forsan Canavalia gladiata*, DC.; Buchenau in Abhandl. naturwiss. Ver. Bremen, vii. p. 277.

South Trinidad. *Copeland.*

Among other places, the widely dispersed *Canavalia gladiata* inhabits the maritime woods of Brazil.

Dr Buchenau saw only one well-preserved pod.

SAMYDACEÆ.

Abatia sp.

Abatia sp., Buchenau in Abhandl. naturwiss. Ver. Bremen, vii. p. 277.

South Trinidad. *Copeland.*

In the absence of flowers this could not be determined with certainty. The genus *Abatia* is restricted to Tropical South America.

MYRTACEÆ.

Eugenia (Syzygium) sp.

Eugenia (*Syzygium*) sp., Buchenau in Abhandl. naturwiss. Ver. Bremen, vii. p. 277.

South Trinidad.—Summit of the island—*Copeland.*

COMPOSITÆ.

Achyrocline disjuncta, Hemsl.

Achyrocline disjuncta, Hemsl., n. sp.

Achyroclini capitatæ affinis, recedit foliis tenuioribus flaccidis, involucri bracteis atioribus, acheniis nudis, &c. *Herba* humilis, dense ramosa, araneoso-hirsuta. *Folia*

conferta, sessilia, lineari-oblonga, 9–12 lineas longa, vix acuta, tenuia, flaccida, rugulosa, margine recurva. *Capitula* numerosa, in apicibus ramorum confertissima, sessilia, basi indumento araneoso vestita, sæpius 6-flora; involucri bracteæ 12–15, ovato-oblongæ, vix acutæ, flores paullo superantes, omnino scariosæ, glabræ, flavæ. *Flores* minimi, graciles, 2 sæpius ♀ et paullo pinguiores, reliqui ♀; corollæ cylindraceæ; antheræ sagittatæ. *Achenia* oblonga, glabra, nuda; pappi setæ vix scabræ, quam corolla fere duplo longiores.

South Trinidad.—Endemic. Centre of the island, at about 2000 feet; abundant in patches—*Copeland.*

At first sight this looks very much like *Achyrocline capitata*, Baker, from the mountains of Brazil, but a closer comparison proves them to be distinct. *Achyrocline capitata* has much thicker, almost coriaceous leaves, furnished with a short hard mucro; narrower, white involucral bracts and muricate achenes. It appears also to be of a more woody nature than our plant. The small specimen in Kew Herbarium was communicated by Dr Buchenau for determination, and he was informed that it was a species of *Achyrocline* closely allied to *Achyrocline capitata*. In an enumeration (Abhandl. naturwiss. Ver. Bremen, vii. p. 277) of the plants collected by Dr Copeland, Dr Buchenau records it as *Achyrocline capitata*, Baker, with the remark, "Probably only a starved form of this species, but possibly a distinct variety of it, or a very closely allied species." But from Dr Copeland's narrative there is no reason to suppose that the plant was starved or stunted; on the contrary, he states that it grew abundantly and gregariously.

AMARANTACEÆ.

Alternanthera paronychioides, A. St Hil.?

Alternanthera paronychioides, A. St Hil.? Buchenau in Abhandl. naturwiss Ver. Bremen, vii. p. 277.

South Trinidad.—Summit of the island—*Copeland.*

A plant widely dispersed in Tropical America.

EUPHORBIACEÆ.

Ricinus communis, Linn.

Ricinus communis, Linn., Sp. Pl., 1st ed., p. 1007; DC., Prodr., xv. 2, p. 1017.

South Trinidad.—Introduced by man?—*Copeland.*

The castor-oil tree is now found in nearly all warm countries, but it is believed to be indigenous only in the Old World, and most likely only in Tropical Africa.

MONOCOTYLEDONES.

CYPERACEÆ.

Cyperus (Papyrus) atlanticus, Hemsl. (Plate XXIII.)

Cyperus (*Papyrus*) *atlanticus*, Hemsl., n. sp.

Cypero ligulari affinis, a quo differt umbellis multo densioribus, spiculis plurifloris, glumis latioribus.

Caules 6–20 poll alti, tenuiculi, obscure trigoni, læves. *Folia* caulem æquantia vel superantia, e basi lata longe attenuata, supra nuda, subtus secus costam leviter scabrida, marginibus scabridis. *Involucri* bracteæ circiter 5, angustæ, inæquales, longiores usque 9–12 poll. longæ. *Umbellæ* 6–12-radiatæ densissimæ, radiis 1–1½ poll. longis. *Spiculæ* planæ, sæpius 5-floræ, numerosæ, confertissimæ, 3–4 lineas longæ. *Glumæ* laxiuscule imbricatæ, glabræ, striatæ, latæ, apice subcucullatæ, margine latiuscule scariosæ, dorso infra apicem mucronulatæ, basi appendiculatæ, appendicibus demum a glumis secedentibus et rhachi persistentibus. *Stylus* trifidus. *Nux* triangularis, minutissime punctata, quam gluma subduplo brevior.

South Trinidad.—Endemic. Dry rocks near the sea—*Hooker*.

Fimbristylis (Oncostylis) nesiotis, Hemsl. (Plate XXIV.)

Fimbristylis (*Oncostylis*) *nesiotis*, Hemsl., n. sp.

Oncostylo vestito et *Oncostylo junciformi* affinis, sed omnino glaberrima foliis multo gracilioribus culmo sæpissime longioribus.

South Trinidad.—Endemic—*Hooker*.

This plant, which was collected by Sir J. D. Hooker on the outward voyage of Sir J. Ross's Antarctic Expedition in 1839, is closely allied to the two species named; yet, although easily distinguished by sight, it is difficult to express the differences in words. Ripe nuts are wanting, or a more tangible characteristic of the species might, perhaps, be adduced. There are three sheets of specimens showing the plant in as many different conditions. There is the taller form (fig. A. in our plate), in which the leaves are longer than the culms; and there is the dwarf form (fig. B.) with culms longer than the leaves. Besides these there are two or three tufts bearing new leaves associated with the previous year's culms, which are longer than the leaves; the latter being about a foot long, and the former nearly eighteen inches. There is also one tuft of leaves, the tips of which have been cut off, but which are still fifteen inches long. The flowers of only one head are in good condition, the others having been eaten by insects. The very slender flexible leaves and culms at once distinguish it from the relatively stout, rigid *Oncostylis junciformis*; and the other allied species, *Oncostylis vestita*, is remarkable for its hairiness.

Nevertheless, in consequence of one of the sheets having been erroneously labelled "Trinidad, Lockhart," Grisebach regarded it as West Indian, and named it "*Oncostylis junciformis*," probably without close examination, as he had specimens of the genuine *Oncostylis junciformis* before him at the same time from Trinidad in the West Indies.

GRAMINEÆ.

Sporobolus virginicus, Kunth.

Sporobolus virginicus, Kunth, Gram., i. p. 67, et Enum., i. p. 210.
Sporobolus littoralis, Kunth; Griseb., Fl. Brit. W. Ind.

South Trinidad.—Under the cliff—*Hooker.*

Widely dispersed on tropical and subtropical sea-shores, including many remote islands.

CRYPTOGAMÆ.—VASCULARES.

FILICES.

Cyathea copelandi, Kuhn et Luerssen.

Cyathea copelandi, Kuhn et Luerssen in Abhandl. naturwiss. Ver. Bremen, vii. p. 278.

South Trinidad.—Endemic. Near the summit—*Copeland.*

Asplenium furcatum, Thunb.

Asplenium furcatum, Thunb., Prodr. Fl. Cap., p. 735; Hook., Sp. Fil., iii. p. 165; Luerssen in Abhandl. naturwiss. Ver. Bremen, vii. p. 277.
Asplenium præmorsum, Swartz, Fl. Ind. Occ., iii. p. 1620.

South Trinidad.—Plentiful in patches on the summit—*Copeland.*

Very widely diffused in warm countries.

Luerssen states that the form collected by Dr Copeland is a very large and robust one, such as is rarely found in America, and more like some of the South African specimens in the collections of Breutel and others.

Asplenium compressum, Swartz.

Asplenium compressum, Swartz in Schrad. Journ., 1800, ii. p. 52, et Synop. Fil., pp. 79 et 270; Hook., Fil. Exot., t. 76; Luerssen in Abhandl. naturwiss. Ver. Bremen, vii. p. 278.

South Trinidad. *Copeland.*

Previously only known from the island of St Helena.

Polypodium lepidopteris, Kunze.

Polypodium lepidopteris, Kunze in Linnæa, xiii. p. 132; Hook., Sp. Fil., iv. p. 211; Hook. and Bak., Synop. Fil., p. 346; Luerssen in Abhandl. naturwiss. Ver. Bremen, vii. p. 277.

South Trinidad.—Below the cliff—*Sir Henry Lefroy*; abundant near the summit—*Copeland.*

A very common fern throughout Tropical America; also occurring in the Galapagos.

This is one of the four plants gathered by the small party that landed from the "Erebus" and "Terror" on Sir James Ross's outward voyage to the Antarctic Sea.

CRYPTOGAMÆ.—CELLULARES.

LICHENES.

Ramalinei.

Ramalina anceps, Nyl.

Ramelina anceps, Nyl., Synop. Lich., p. 290; Müll., Arg. in Abhandl. naturwiss. Ver. Bremen, vii. p. 280.

South Trinidad. *Copeland.*

West Indies.

Usneei.

Usnea barbata, var. *rubiginea.*

Usnea barbata, var. *rubiginea*, Meyen et Fest in Nov. Act. Nat. Cur., xix., 4, Suppl., i. p. 200; Müll., Arg. in Abhandl. naturwiss. Ver. Bremen, vii. p. 280.

Usnea florida, forma rubiginea, Michx., Fl. Bor. Am., ii. p. 332.

South Trinidad. *Copeland.*

This lichen is one of the most variable and widely diffused.

Parmeliei.

Parmelia latissima, Fée, var. *insidiosa*, Müll. Arg.

Parmelia latissima, Fée, var. *insidiosa*, Müll., Arg. in Lich. Beitr., n. 190, et Abhandl. naturwiss. Ver. Bremen, vii. p. 280.

South Trinidad. *Copeland.*

A new variety of a widely dispersed species.

Pyrenocarpei.

Dichonema sericeum, Mont.

Dichonema sericeum, Mont. in Belang. Voy. aux Indes orientales, Crypt., p. 155, t. 14, fig. 1; Müll., Arg. in Abhandl. naturwiss. Ver. Bremen, vii. p. 280.

South Trinidad.—On trees—*Copeland.*

South America and Polynesia.

THE TRISTAN DA CUNHA GROUP.

INTRODUCTORY NOTES.

Position and Physical Conditions, &c.[1]

The Group consists of three principal islands, named Tristan da Cunha, Inaccessible, and Nightingale, and a few outlying islets. Tristan da Cunha itself is in lat. 37° 2′ 48″ S., and long. 12° 18′ 20″ W. of Greenwich, and the other islands are distant from it respectively about twenty-three and twenty miles to the south-west, Inaccessible Island being nearly equidistant from the other two, and the most westerly of the group, which lies about one-third nearer to South Africa than it does to any part of South America. Like the majority of the islands dealt with in this work, they are of volcanic origin.

Tristan da Cunha is circular in form, has an area of some sixteen square miles, and rises in the centre to an altitude of upwards of 8000 feet above the sea-level. It rises like one mass of rock abruptly from the sea, ascending, according to Carmichael, at an angle of forty-five degrees to the height of 3000 feet; and this mass is surmounted by a dome[2] upwards of 5000 feet high, on the summit of which is the crater of an old extinguished volcano. There is a water-colour drawing of it by Carmichael in the Timber Museum at Kew.

Inaccessible Island is the next in size, being four and a half miles long by about two miles broad, and its greatest altitude is 1840 feet.

Nightingale Island is less than a square mile in area, and its highest peak is 1100 feet.

With regard to the climate of this group, there are no records of any series of observations; but we learn from the accounts of different travellers that on the whole it is very rough and wet, though pleasant enough at certain seasons. Captain Carmichael,[3] who spent four months (November to March) on Tristan da Cunha, gives the following particulars:—

"The climate of Tristan da Cunha is so mild, that the herbage remains unimpaired throughout the year. Snow is never seen on the low land; and the only indication of winter is a transient

[1] Restricted here to the broadest features: further particulars will be found in some of the extracts from Carmichael's and Moseley's descriptions of the vegetation, &c.

[2] This word is borrowed from Carmichael because he so frequently uses it in localising his plants.

[3] *Transactions of the Linnean Society of London*, xii. (1818), p. 491.

sprinkling of hoar-frost, too slight to give any serious check to vegetation. The thermometer during summer rarely ascends beyond 74° in the shade, and stands at about 110° when exposed to the meridian sun. At night it occasionally falls as low as 48° or 50°.

"If we may give credit to the information of a man of the name of Currie, who has lived on the island for the last six years, its climate may be regarded as one of the most rainy in the world. According to his account, the months of January, February, and March are the only period throughout the year in which fair weather may be expected with any degree of certainty. During the other nine months the rain, he told us, is almost perpetual. How far the latter part of this statement may be correct remains still to be proved; but it was our misfortune so far to experience the fallacy of the first, that from the 28th of November, the day on which the detachment landed, to the 30th of March, when I quitted the island, it rained on an average every second day.

"This excessive humidity is not, however, entirely chargeable to the latitude in which the island is situated. Of this we had frequent and tantalising proofs; for, at the very time that the rain poured heaviest down, we could plainly distinguish, from under the skirts of the cloud which hung over, the distant horizon illuminated by the rays of the sun.

"The power which high mountains possess of condensing the moisture of the atmosphere and precipitating it in the form of rain is nowhere, indeed, more apparent or more unremittingly exerted than on this island. The upper region of the mountain is usually involved in a thick cloud, which not only obscures the whole island, but extends its shade to some distance over the surrounding ocean. From this cloud the rain descends in heavy and protracted showers, for the most part on the lower ground only, but occasionally on the summit also. In the latter case its fall is announced by the sudden appearance of torrents of water pouring in a hundred channels over the edge of the precipice, dashing down from cliff to cliff, and forming a series of cascades the most magnificent, perhaps, on the whole face of the globe.

"With such a moist climate and such frequent rains, it is a circumstance worthy of remark, that the island is but scantily supplied with running water. The only permanent stream of any magnitude in the whole island is one which gushes out at the base of the mountain immediately behind the cantonment. Excepting this brook, you meet with nothing from one end of the plain to the other but the dry beds of mountain torrents, which are impetuous, indeed, while they flow, but cease with the shower to which they owe their existence.

"The prevailing winds off Tristan da Cunha blow from the westward and southward. Strong gales are frequent, but rarely continue above twenty-four hours. They never blow quite home on the islands, but incline upwards at some distance from the shore, and striking against the face of the mountain, are beat back on the low land in furious whirlwinds."

Mr Moseley experienced one of these gales, which he describes[1] in the following words:—

"I botanised under the cliffs on the lowland in the morning, and intended to reserve the upper plateau and cliff ascent for the afternoon; but, as I was making my way up the steep slope above the settlement in the afternoon, at about three or four o'clock, suddenly a dark squall came scudding over the sea, and rapidly reaching us, chilled us to the bone. My guide, a small boy, born and bred in the island, crouched down instantly under the tall grass and fern, lying on his side, drawing

[1] Notes by a Naturalist on the Challenger, p. 112.

up his legs, tucking in his head, and screwing himself down into the grass like a hare into her form. We followed his example, and found that the perfection of the shelter to be thus obtained from the scanty herbage was astonishing.

"The squall being felt at the anchorage, up went the recall flag on board the ship, and as soon as the hail ceased, I had to hurry down to the shore, without having ascended the mountain-side for more than five hundred feet."

In another place Mr Moseley says that Tristan da Cunha has a peculiar, cold, barren, uninhabitable appearance, which seems to be characteristic of the islands of the Southern Ocean.

With regard to the representatives of the animal kingdom in the islands that partly or wholly subsist on vegetable productions, formerly there were wild hogs, goats, and rabbits in large numbers on the main island, the descendants of a few individuals placed thereon by various mariners. In 1873, however, according to Moseley, the wild goats and pigs were certainly extinct, and the rabbits nearly, if not quite so. At the time of the visit of the Challenger Expedition, the islanders possessed about 400 or 500 head of cattle, and as many sheep. There were still at that date plenty of pigs, though no more goats in Inaccessible Island.

History of the Botanical Exploration of the Group.

Disregarding a few odd specimens picked up and preserved by various persons who have landed on the main island, we are only aware of the existence of four collections of Tristan da Cunha plants; and of these we have been able to examine and compare three. The first was made by the accomplished and enthusiastic French traveller and botanist, Aubert du Petit-Thouars, in January 1793.[1] This collection we have not seen, but the descriptions and figures of the plants published[2] by Thouars himself are in nearly every instance sufficient for their identification, so that few difficulties have arisen in determining the later collections in accordance with his original names of the plants. Thouars was on his way to the Mascarene Islands, in a small vessel of less than one hundred tons burthen, when the captain found it necessary to put in at Tristan da Cunha for water; and although he had very little time (five days), and was only able to land on the principal island, he not only made a nearly complete collection of the plants of that island, but he also surveyed the others; and in the work of which the title is given below are a map and several views of the three islands. The time actually devoted to botanising is very circumstantially set forth. On the 3d of January, the day of their arrival,

[1] Near the same date of the same year, Sir George Stanton, who was one of the members of Lord Macartney's embassy to China, collected a few plants in Tristan da Cunha, Amsterdam, and St Paul Islands.

[2] Melanges de Botanique et de Voyages. Premier Receuil, Paris, 1811. There are two parts, consecutively paged, entitled respectively, Description Abrégé des Isles de Tristan d'Acugna, and Esquisse de la Flore de l'Isle de Tristan d'Acugna. The latter includes figures of ten of the flowering plants and four of the ferns.

Thouars passed five hours on the island, and collected fifty species of plants. No landing was effected on the 4th, but on the 5th he spent eight hours ashore, and added thirty plants to his previous collection; and on the 6th he landed at nine o'clock in the morning, remaining on the island until ten o'clock of the morrow, in consequence of his having been benighted in an attempt to scale the dome of the mountain. This excursion, though long and up to a great elevation, yielded only twenty new plants. Finally, an hour was spent on the day of departure on another point of the island, where, however, not a single plant was seen that had not been collected before. The summary below of the plants he collected is interesting for comparison with our enumeration of all the plants known from the islands, while affording striking evidence of his activity and industry during the short period he was ashore.

	Orders.	Genera.	Species.	Orders.	Genera.	Species.
Acotyledones	Fungi	4	4	5	23	75
	Algæ	4	21			
	Marchantiæ	3	11			
	Musci	5	23			
	Filices	7	16			
Monocotyledones	Cyperi	3	6	2	5	9
	Gramina	2	3			
Dicotyledones	Polygoneæ	1	1	9	14	16
	Atriplices	1	2			
	Ericæ	1	1			
	Corymbiferæ	3	3			
	Rubiaceæ	1	2			
	Umbelliferæ	2	2			
	Gerania	1	1			
	Rosaceæ	1	1			
	Rhamni	1	1			
	Cultæ	2	2			
	Totals			16	42	100

It has been stated that few difficulties have arisen in identifying Thouars's plants, but an exception should have been made with regard to some of the cellular cryptogams. In the following enumeration his name is cited after each of the species which he is known to have collected, and the citations are complete for the vascular plants. The additions made by subsequent travellers are noted in the succeeding paragraphs. Much more information might be gleaned from Thouars's work; but as Carmichael, by reason of his lengthened stay in the island, had the advantage of fuller knowledge, we prefer quoting him for the condition of the main island at the beginning of the present century; while Moseley must be our authority for its appearance ten years ago, as well as our sole authority for the vegetation of Inaccessible and Nightingale Islands; their natural history not having been investigated prior to the visit of the Challenger.

Captain Carmichael's sojourn in the island was during the last month of 1816 and the first three months of 1817. He and his party appear to be the only persons who have succeeded in reaching the summit of the dome.

What Carmichael has published[1] on the aspects and composition of the vegetation is so well written that we deem it better to extract the more interesting passages than to condense them. They follow here:—

"The face of the mountain, as far up as the base of the dome, is mostly covered with brushwood, intermixed with fern and long grass, which veil its native ruggedness. In many parts, however, it is completely bare, and presents to view the edges of a vast number of strata arranged horizontally, or at slight degrees of inclination. These strata are in general from five to ten feet in thickness, and vary essentially in their internal structure. The greater number are of solid rock, of a bluish-grey colour and extreme hardness, in some instances homogeneous, in others exhibiting crystals of hornblende, felspar, and olivin sparingly scattered, or forming more than a moiety of the compound mass. Between those are frequently interposed beds of scoria cohering from the effect of partial fusion; of tufa studded with crystals of augite; or of ashes condensed by the pressure of the superincumbent mass. The latter, still retaining in a great measure their friable nature, moulder gradually away, and then leave the more compact strata in projecting shelves. Along the north-west side of the island runs a belt of low land about six miles long, varying from a quarter of a mile to a mile in breadth, and presenting to the sea a perpendicular front from fifty to three hundred feet in height. The whole of this plain is a confused assemblage of stony fragments, scoria, and other volcanic products, resting on a bed of lava. . . . The surface, though apparently smooth, and even while clothed with its native herbage, is in fact extremely irregular, being everywhere broken by small ridges of loose stones concealed under a mere scurf of soil. Between those ridges, however, the soil is pretty deep, and consists for the most part of the remains of decayed vegetables, with here and there a substratum of alluvial earth approaching to the nature of clay. . . . This soil has been found admirably adapted for the production of culinary vegetables, but is far too light to support the weight of trees or large shrubs. . . . The northern extremity of the plain is in a great measure cleared of its wood. By setting fire to the grass the trees have been so far scorched as to destroy their vegetation; but they still lie strewed on the ground, and it will cost some labour to remove them. The rest is still in a state of nature, covered with an impenetrable copse.

"The ascent to the peak is practicable in sundry places, but the undertaking is attended with serious difficulties and not free from danger. I went up on the 4th of January, accompanied by Dr Evers, a couple of servants, and a guide, who had been up some days before. We experienced some obstruction at the outset in making our way through the long grass (*Spartina arundinacea*) which grows along the lower part of the mountain in close entangled tufts. As we advanced, our progress was retarded by the extreme steepness of the ascent and the loose incohesive nature of the rocks, which we could hardly venture to touch, lest these fragments should fall upon our heads; nor did we run less risk in availing ourselves of the arboreous *Phylica* to support our weight, for the greater portion of these being rotten, it was necessary for us to choose with caution, as a mistake

[1] *Transactions of the Linnean Society of London*, xii. (1818) pp. 483–513.

might prove fatal. After a laborious effort of three hours, however, we gained the tableland, and there discovered, to our mortification, that the upper region of the mountain was completely obscured. Urged by a strong west wind, the cloud broke from time to time against the sides of the dome, and gave us a transient glimpse of the peak at a height and distance that were by no means encouraging. After resting for a few minutes, we proceeded across the base of the dome, trusting that the cloud would be dissipated by the meridian sun; nor were we in this respect altogether disappointed. In the meantime, we found the ground, as we advanced, a perfect swamp, studded with tufts of small rushy plants, that gave way under the slightest pressure. Here also we had to pass through extensive patches of *Lomaria robusta* [*Lomaria boryana*], the stems of which, like junks of old cable, trail along the ground, and cross and recross each other in such an intricate manner, that it required all our circumspection to avoid stumbling over them. Further on the ground becomes more firm, but is perforated in all directions by the various species of petrel, which resort in myriads to the island during the season of incubation.

"The surface of the dome is furrowed on every side with ravines, which take their rise among the scoria of the peak, deepen as they descend, and open in tremendous chasms on the edge of the precipice. The various portions of the surface, thus cut off in a great measure from all mutual communication, grow narrower and narrower as you approach the base of the peak, and dwindle at last into bare ridges of scoria, so sharp and so steep that the wild goats of the mountain dare hardly venture to thread them. That ridge in particular, over which we must either have passed or returned without accomplishing our object, is for at least fifty yards not more than twelve inches in diameter. The wind blowing in violent gusts at the time rendered it the more difficult to maintain that strict equilibrium of body the slightest bias from which, either to the one side or the other, would precipitate any of us in an instant to the depth of several hundred feet. We got safely over it, however, though with some trepidation, and in a manner as various, I believe, as the number of the party would admit of.

"A short way beyond this ridge vegetation ceases; not so much owing to the elevation of the ground, as to the total want of any kind of soil wherein plants could fix their roots. From this point to the summit, a distance of about a mile and a half, the whole is a mass of scoria, fragments of cellular lava, and all sorts of volcanic refuse, slipping under your feet, and rendering the toil of ascending excessive. . . . The crater is nearly a mile in circumference: its border is irregular, the south side being two or three hundred feet higher than the north, by which we ascended. At the bottom of it there is a pool of water about 150 yards in diameter, to which the descent by the north side is gradual and easy. . . . I found several mosses on the summit of the peak, and some lichens, among others the *Lichen paschalis*."

Altogether, Carmichael collected fifty-five species of vascular plants, or only sixteen more than Thouars, excluding two, *Lactuca sativa* and *Raphanus sativus*, which the latter found as the remains of cultivation. Indeed, after making certain other necessary reductions, as the exclusion of *Sonchus oleraceus*, on account of its being an introduced plant, and the elimination of two of the species of *Isolepis* (*Scirpus*), in consequence of their being mere varieties of the species collected by Thouars, the total result of four months' observation is an addition of about a dozen species to those collected by Thouars in as many days. On the other hand, Carmichael found and recognised all the vascular plants

enumerated by Thouars, except one, *Phalaris cespitosa*, and this we have been unable to identify with any of the plants in the collections which we have examined, though, according to Thouars, it alone covered large spaces of ground.

The additional plants are—*Ranunculus* sp., *Cardamine propinqua*, *Convolvulus* sp., *Atriplex plebeja*, *Agrostis ramulosa*, *Agrostis media*, *Lycopodium* two species, *Trichomanes angustatum* (*tenerum*), *Pteris incisa*, *Asplenium monanthemum*, *Asplenium medium*, *Polypodium australe*, and *Ophioglossum vulgatum*.

Several of the foregoing plants are noteworthy for different reasons. Thus the *Ranunculus*, which is possibly the Kerguelen *Ranunculus biternata*, and the two endemic species of *Agrostis*, which appear to be most nearly related to our *Agrostis delislei* from Amsterdam Island, afford additional evidence of the common origin of the vegetation of these southern islands. Then there is the *Atriplex* which Carmichael says grows along the shore, and seems to be almost a stranger on the island. This has not been identified with anything else; therefore we are obliged to regard it as endemic, though we strongly suspect it may yet turn out to be an introduced plant. It is in no other collection that has come under our notice. Out of the six additional ferns, one, *Asplenium medium*, is endemic, and a well-marked species.

The next collection in point of date is that made by MacGillivray and Milne, naturalist and assistant naturalist respectively to the expedition of H.M.S. "Herald" to examine the Fiji and other Polynesian Islands, under the command of Captain Denham. This collection was made in November 1852, and consists of about forty species of vascular plants, besides a few undetermined specimens of Musci and Hepaticæ, without fructification. It contains no species that does not occur in other collections, and as nothing has been published concerning it by the collectors themselves, it calls for no further remark in this place.

Lastly, there are the collections of the Challenger Expedition, which, as has already been mentioned, include the plants of all three islands of the group.

These collections were made in October, so that the main island has been botanised by different travellers from October to March; and we may assume that its flora has been fully exhausted, at least as far as the vascular plants are concerned. Without counting the cellular cryptogams, Mr Moseley collected forty-five species of plants, the result of one visit to each island. The collection from the main island was restricted to the irregular strip of land opposite the anchorage, and to the gully immediately above the settlement, which had been explored only to a height of about four hundred feet at the time the recall was hoisted on board the ship, owing to a sudden squall, accompanied by hail. Nevertheless, in the six hours he was ashore, Mr Moseley gathered specimens of thirty-eight vascular plants, though, of course, he missed the more interesting endemic species peculiar to the high land. The numbers for the other islands are—Inaccessible twenty-one, and Nightingale ten species. The special interest of this

collection is that it establishes the fact that the vegetation of the three islands is composed of the self-same species. It embraces, however, one new species, *Cotula moseleyi*, Hemsl., from Nightingale Island, besides a very fine series of *Scirpi*, which constitute the bulk of the short herbage in some parts of the islands. Several of these forms of *Scirpus* are very different in appearance, and Mr Boeckeler, to whom specimens were sent shortly after their arrival in England, has described five of them as new species; but, after carefully studying numerous specimens, we can give that rank to only one. All the principal forms are figured in this work, with the object of showing their close similarity in structure and diversity in habit, which latter is probably due to differences of soil and situation.

Here follow some extracts from Mr Moseley's notes[1] on the vegetation of the three islands:—

"*Tristan da Cunha.*—The cliffs have a scanty covering of green, derived mainly from grasses, sedges, mosses, and ferns, with darker patches of *Phylica nitida*[2] and *Empetrum nigrum*, var. *rubrum*, which become more and more marked towards the summit. Conspicuous patches of bright green are formed under the cliff at the foot of the watercourses by a dock (*Rumex frutescens*). Dotted about amongst the other herbage are rounded tufts of pale bluish green, consisting of *Spartina arundinacea*. On near inspection, the damp foot of the cliffs is found to be covered with mosses and liverworts, which latter form in favourable situations continuous green sheets, covering the earth beneath the grass.

"Unfortunately, specimens in fructification were rare. Two ferns, *Asplenium obtusatum*, growing in the clefts of the rocks, and *Lomaria alpina*, are most abundant under the cliffs. The *Lomaria* plants, where situated on stony slopes and comparatively starved, were all provided with fertile fronds; whilst, when growing in the rich vegetable mould, they were commonly without fructification. The commonest flowering plants under the cliffs are *Apium australe*, *Empetrum*, *Sonchus oleraceus*, *Hypochæris glabra*, and a plant with strongly scented leaves, *Chenopodium tomentosum*, which is used as tea by the inhabitants, a decoction of the leaves being drunk with milk and sugar. The plant also grows abundantly on Inaccessible Island, but only the remains of last season's inflorescence were to be found. *Nertera depressa* is very abundant, creeping everywhere amongst the moss. The yellow-flowered *Oxalis corniculata* was not abundant. *Cardamine hirsuta* was, singularly enough, not met with on either of the three islands of the group, though said by Carmichael to be abundant on the sea-shore.[3] Some shallow fresh-water ponds, close to the sea-beach, were covered with *Confervæ*, but contained no *Chara*. Around these ponds grew a minute sedge (*Scirpus*, sp.) not found on the other two islands of the group.

"In the gully above the settlement, *Phylica nitida*, the only tree in the islands, commences at about 400 feet elevation. There are no trees in this locality, since they have been cut down for

[1] *Journal of the Linnean Society of London*, xiv. pp. 377–384; and Notes by a Naturalist on the Challenger, pp. 108–137.

[2] The nomenclature has been altered in a few instances to bring it into accord with that adopted in this work.

[3] This statement is incorrect, and arose from a misreading of the remarks on the distribution of *Cardamine hirsuta*, in Hooker's Flora Antarctica.

firewood, but there is still plenty of wood on the island, and the trunks of the trees on the upper plateau reach a diameter of 15 inches, as I was told by the inhabitants. The wood supply is not almost exhausted, as is stated in the Cruise of the "Galatea." *Hymenophyllum æruginosum* was found in this gully, and a large specimen of *Lomaria boryana* was picked up, detached, apparently fallen from above. In a deep ditch near one of the cottages are two or three willow bushes, which, in this sheltered situation, are doing well. The water of the streams running down the cliffs opposite the anchorage was found to have a temperature of 50° F., and one of the fresh-water ponds at sea-level a temperature of 54° F. The greater cold of the stream is obviously due to the influence of the snow-water from the peak above.

"The surf throws up a bank of seaweed on the beach; but the heavy waves, dashing on the coarse boulders of which the beach is composed, pound up the algæ to such an extent that a useful specimen is scarcely to be found. The island has a belt of *Macrocystis pyrifera* growing round it. The part between the anchorage and the shore was in about fifteen fathoms.

"*Inaccessible Island.*—On the N.E. side, where the Challenger anchored, the island presents a range of perpendicular cliffs about 1000 feet in height, resembling those of Tristan. Beneath the cliffs is a considerable tract of uneven lower land, composed of *débris* from the cliffs above, and scattered over with fallen rocks. The vegetation of the cliffs is closely similar to that of those of Tristan, but the lower land is covered over its greater part with a dense growth of the tall reed-like *Spartina arundinacea*, which forms a vast penguin rookery. Amidst the sea of grass, on the summits of slight elevations, are patches of *Phylica nitida*. The trees grow thickly together, and their branches meet overhead. The ground beneath them is free from tussock (*Spartina*), and covered with ferns, mosses, and sedges, with *Acæna sanguisorbæ*, and the tea plant (*Chenopodium tomentosum*), in great abundance, the latter here forming a small bush with woody stems. The trunks of the trees are covered with lichens. In a swamp near the penguin rookery a moss was found in abundance, and a sedge (*Carex insularis*), different from those noticed elsewhere, together with *Hydrocotyle capitata*, found also in Tristan, but not obtained in flower.

"Two Germans, one of whom had been a sub-lieutenant in the army in the late war, and who is well educated and highly intelligent, have been living on the island for two years. They gave me much information about the plants. They have cultivated potatoes and cabbages, and several other vegetables, and have introduced two species of clover, which are spreading rapidly. They probably also brought with them to the island a *Convolvulus*, which is very abundant on the cultivated ground near their hut. The ascent to the top of the island is impracticable from the side on which I was landed; and Captain Nares considered it unsafe to land a boat on the north side, where the path to the summit lies. No plants, therefore, were obtained from the higher land. The Germans, however, who frequently spend months together there, say that the plants there are of the same kinds as those below; but, in addition, grow the *Empetrum* of the other islands, *Lomaria boryana*, a *Lycopodium*, said by them to be different from the one found in their company on Nightingale Island, and a small daisy-like flower (*Lagenophora commersonii*). The tussock grass, which spreads up the slopes and straggles up the cliffs to the summit, grows also in large patches on the upper plateau. *Phylica nitida* grows in abundance there also, and *Nertera depressa*, the berries of which are the favourite food of the remarkable endemic thrush of the Tristan group (*Nesocichla eremita*). The berries of *Phylica* are eaten by the bunting (*Emberiza brasiliensis*). On the sea-shore, several species of seaweed grow in considerable quantity, attached to the rocks in shallow

water within the action of the surf. The usual belt of *Macrocystis* ranges along this side of the island.

"*Nightingale Island.*—Tussock grass (*Spartina arundinacea*) covers the whole island with a dense growth, excepting on the summits of the ridges and a few patches here and there on the lower tract, which are occupied by *Phylica nitida*. The tussock here, as at Inaccessible Island, forms an enormous penguin rookery. It was found impossible to reach the highest points of the island, the growth of grass being so thick that it was extremely difficult to penetrate. The plants found on the island were the same as those met with on Inaccessible Island, and grew here under similar conditions. *Lycopodium saururus* was found here, however, on the only high ground attained; and a groundsel-like plant (*Cotula moseleyi*), different from the one so common in Tristan, and not found in Inaccessible Island, was extremely abundant, growing even on unoccupied spots in the rookery. Several plants found in the other islands were not seen here, amongst these *Sonchus oleraceus*. The island has never been inhabited, and is visited only in the sealing time. Two fungi were found on the dead stems of *Phylica nitida*. A large number of these trees had at one spot been prostrated by the wind, and were lying dead. The small outlying islands are covered with tussock, and are rookeries.

"The rocky shelves on the coast frequented by the seals, and leading up to their caves, are coated with a thin layer of a small dark green *Ulva*. The rocks and the algæ were quite dry at the time of our visit, and were some feet above the reach of the ordinary surf. The dried dark green pellicle on the rock had a peculiar shining appearance, almost metallic. Specimens of the rock, with the alga attached, are sent to Kew. There is the usual belt of *Macrocystis pyrifera* here, very dense, and difficult for a boat to push through."

From the foregoing extracts we learn that *Phylica nitida* and *Spartina arundinacea* constitute almost the whole of the conspicuous part of the vegetation of these islands, and it is only on a closer inspection that the other elements become apparent. The *Phylica* often occurs in patches or coppices in the midst of large areas of the grass, the ground beneath being covered with a thick growth of sedges, ferns, and mosses, associated with *Nertera depressa, Acæna sanguisorbæ, Chenopodium tomentosum*, &c.

Mr Moseley is the author of the following particulars of these two plants:—

"In the penguin rookeries the grass, known to the inhabitants of Tristan as 'tussock,' has a habit which appears to be closely similar to that of the Falkland tussock, *Dactylis cæspitosa*, as described by Sir Joseph Hooker in the Flora Antarctica, p. 384. This grass grows to a height of five or six feet, springing in tufts, and forming massive boles or clumps at its base, composed of the contorted bases of the stalks and root-fibres closely matted together. These masses are tough and hard, almost requiring an axe to cut them. The grass thrives best where the ground is saturated with the penguins' dung. The basal masses gradually pass into a peaty, richly manured soil, thus formed, several feet in thickness. The growth of grass is so dense that it is with the utmost labour that a way can be forced through it, except along the penguin roads; and it is so high, that it is only by mounting on an occasional rock, fallen from above, that the direction which has been taken can be made out.

"*Phylica nitida* grows, under the shelter of the cliffs of Inaccessible Island, to a height of twenty feet, or somewhat more. The trunks are never straight, but usually procumbent and again ascending. The largest that I saw was one foot in diameter. On the upper plateau of Inaccessible Island, some trunks are said by the Germans to be eighteen inches in diameter; but the trees there are never so high as they are below, being beaten down by the gales. The wood of the tree is brittle, and, when exposed, rapidly decays; but it is serviceable when dried carefully with the bark on. The Germans use it even for handles to their axes and other tools."

Independently of evidently introduced plants, fifty-five species of vascular plants have been collected in the Tristan da Cunha group. Their distribution is exhibited in the following table:—

Tabular View of the Distribution of the Vascular Plants of the Tristan da Cunha Group.

Names.	Distribution in the Group.			General Distribution.
	Tristan da Cunha.	Nightingale.	Inaccessible.	
Ranunculus sp.	×	...	...	Uncertain.
Cardamine propinqua	×	...	...	Endemic. ?
Pelargonium australe[1]	×	...	×	Australia; New Zealand.
Phylica nitida	×	×	×	Amsterdam and Mascarene Islands, and Madagascar?
Acæna sanguisorbæ	×	×	×	Amsterdam, Australia, New Zealand, and neighbouring islands.
Hydrocotyle capitata	×	...	×	Endemic.
Apium australe	×	...	×	South temperate zone.
Nertera depressa	×	...	×	South temperate zone, and in America northward through the Andes to Mexico.
Nertera assurgens[1]	×	×	×	Endemic.
Lagenophora commersonii	×	...	...	Temperate South America.
Chevreulia stolonifera	×	...	...	Uruguay; Paraguay; Chili.
Gnaphalium pyramidale	×	...	×	Endemic.
Cotula australis	×	...	...	Australia; New Zealand.
Cotula moseleyi	...	×	...	Endemic.
Convolvulus soldanella?	×	...	...	Temperate zones of both hemispheres.
Chenopodium tomentosum	×	×	×	Endemic.
Atriplex plebeja	×	...	...	Endemic. ?
Rumex frutescens	×	...	×	Endemic.
Empetrum nigrum var. rubrum[2]	×	×	×	Widely diffused in north temperate and Arctic regions, and in extra-tropical South America.
Juncus tristanianus	×	...	...	Endemic.
Scirpus sulcatus[3]	×	×	×	Endemic. ?
Scirpus thouarsianus	×	×	×	Endemic.

[1] The variety *acugnaticum* may be peculiar to the group.

[2] The variety *rubrum* is restricted to South America and the Falkland Islands.

[3] These *Scirpi* form the greater part of the green carpet of the islands.

Names.	Distribution in the Group.			General Distribution.
	Tristan da Cunha.	Nightingale.	Inaccessible.	
Scirpus oliveri	...	...	×	Endemic.
Carex insularis	×	...	×	Endemic.
Carex thouarsii	×	×	...	Endemic.
Uncinia brevicaulis	×	...	...	Amsterdam Island.
Spartina arundinacea	×	×	×	Amsterdam and St Paul Islands.
Agrostis ramulosa	×	...	...	Endemic.
Agrostis media	×	...	...	Endemic.
Lycopodium diaphanum	×	...	...	Endemic.
Lycopodium magellanicum	×	...	...	South temperate zone.
Lycopodium saururus	×	×	...	Widely diffused.
Hymenophyllum æruginosum	×	...	...	Endemic.
Trichomanes tenerum	×	...	...	Endemic.
Adiantum æthiopicum	×	...	×	Widely diffused.
Pteris incisa	×	×	×	Widely diffused.
Lomaria alpina	×	...	...	South temperate zone, except South Africa.
Lomaria boryana	×	...	...	West Indies, South America, Tropical and South Africa, Mascarene Islands, and Madagascar.
Blechnum australe	×	...	×	South Africa, St Paul Island, Bourbon, and Madagascar, S. America.
Asplenium obtusatum	×	×	×	South America; Australia; New Zealand; Polynesia.
Asplenium lunulatum	×	×	×	Widely diffused.
Asplenium monanthemum	×	...	...	America; Canaries; Africa.
Asplenium medium	×	...	...	Endemic.
Nephrodium aquilinum	×	×	×	Amsterdam Island (Fournier).
Nephrodium tomentosum	×	...	...	Mascarene Islands and Madagascar.
Aspidium coriaceum[1]	×	...	...	Widely diffused.
Polypodium punctatum	×	...	...	Widely diffused.
Polypodium australe	×	...	...	South temperate zone, except South Africa.
Gymnogramme cheilanthoides	×	...	...	Endemic.
Vittaria stricta[2]	×	×	×	Endemic.
Acrostichum conforme	×	...	...	Generally diffused in warm countries.
Acrostichum hybridum	×	...	...	South America; Africa; Mascarene Islands.
Acrostichum spathulatum	×	...	...	Tropical America, South Africa, Ceylon, and Mascarene Islands.
Acrostichum succisæfolium	×	×	×	Amsterdam Island; Mauritius (Thouars).
Ophioglossum vulgatum	×	...	...	Generally diffused.

The fifty-five species in the foregoing table consist of twenty-nine flowering plants and twenty-six ferns and lycopods: most unusual proportions, and probably not repeated in any other part of the globe. Out of the twenty-nine flowering plants sixteen are endemic: three, *Lagenophora*, *Chevreulia*, and *Empetrum*, are South American, and not

[1] A very small form.

[2] Scarcely specifically different from the widely spread *Vittaria lineata*.

represented eastward of the Tristan da Cunha group, while six extend only in an easterly direction, some of them only as far as Amsterdam and St Paul Islands, others as far as New Zealand and Australia. Two, namely, *Apium australe* and *Nertera depressa*, occur where there is land all round the south temperate zone, and the latter beyond; and the doubtful *Convolvulus* is a widely spread species. Of the twenty-six ferns and lycopods only six are peculiar to the islands; fourteen are African, and sixteen are American; two are all round the south temperate zone, without touching South Africa; and three are restricted to this group, Amsterdam Island, the Mascarenes, and Madagascar. *Blechnum australe* is so near the South American *Blechnum hastatum* in some of its forms as to be indistinguishable, so we can hardly regard this as an African form.

From this partial analysis of the constituents of the flora of Tristan da Cunha, it will be seen that it consists of three or four distinct elements, no one of which sufficiently preponderates to justify the assumption that it is essentially the original flora which has subsequently been enriched by the other elements. It has been suggested that the flora is mainly Fuegian, but the facts before us do not specially support such a view. They indicate rather the former existence of a floral region distinct from the American and Australian, and, if not African, at least more closely allied to that than to any other. Remnants of this flora still exist in St Helena, Tristan da Cunha, Amsterdam Island, and the Mascarene Islands, and in Eastern and Southern Africa. The distribution of *Phylica nitida* and *Spartina arundinacea*, the prevailing plants in Tristan da Cunha, favour this hypothesis; yet there are perhaps equally weighty facts against it. The strongest American affinity, at least to the present flora, is offered by *Empetrum*, which, though abundant in these islands, is not known to occur eastward of them. *Nertera* cannot be regarded as an American type, with an endemic Tristan species, and the other Tristan species ranging all round the south temperate zone; and the remaining species of the genus more numerous in the eastern hemisphere, extending from New Zealand to the Philippine Islands. The presence of *Chevreulia stolonifera* and *Lagenophora commersonii*, both comparatively rare, will hardly establish an American affinity. A majority of the species of the flora of Tristan da Cunha are characteristic of the present general flora of the south temperate zone rather than any particular part of it. But when we have compiled the lists of plants for the islands eastward to Amsterdam, we shall be in a better position for discussing this question. Among introduced plants, more or less established, we have seen specimens of *Cerastium triviale*, *Oxalis corniculata*, *Malva sylvestris*, *Gnaphalium luteo-album*, *Senecio vulgaris*, *Anagallis arvensis*, *Rumex acetosella*, *Poa annua*, *Poa pratensis*, *Festuca myurus*, and *Festuca unioloides*. Mr Moseley mentions, too, that the Germans whom they found on Inaccessible Island had introduced two species of clover, which were rapidly spreading.

ENUMERATION OF THE PLANTS.

PHANEROGAMÆ.—DICOTYLEDONES.

RANUNCULACEÆ.

Ranunculus? Carmich.

Ranunculus? Carmich. in Trans. Linn. Soc. Lond., xii. p. 506.

Tristan da Cunha.—In a ravine on the tableland—*Carmichael.*

We have examined Carmichael's specimen, which is preserved in the Herbarium of the British Museum, and there can be no doubt that he was correct as to the genus: the species may be *Ranunculus biternatus*, Sm., a Kerguelen Island and South American plant.

CRUCIFERÆ.

Cardamine propinqua, Carmich.

Cardamine propinqua, Carmich. in Trans. Linn. Soc. Lond., xii. p. 507.

Tristan da Cunha.—Endemic? Ravines on the side of the dome—*Carmichael.*

The only specimen we have seen of this is the original, a very imperfect one, in the Herbarium of the British Museum. It may be referable to *Cardamine hirsuta*, Linn., as limited in Hooker's Handb. Fl. N. Zeal., p. 12.[1]

In the Flora Antarctica, ii. p. 232, this *Cardamine* is reduced to *Cardamine hirsuta*, Linn.; and Grisebach (Vegetation der Erde, ii. p. 635) revives the name *Cardamine antiscorbutica*, Banks and Solander MSS., for it. As already stated, it may be a form of *Cardamine hirsuta*, but the specimen is insufficient to decide the question. No one except Carmichael has collected a *Cardamine* in the group; and Mr Moseley specially mentions (Journ. Linn. Soc. Lond., xiv. p. 379) the fact that he did not meet with it in any of the three islands, "though said by Carmichael to be abundant on the sea-shore." The last statement is inaccurate, and was inadvertently made through misreading the remarks in the Flora Antarctica on the general distribution of *Cardamine hirsuta*,

[1] Since this was written, a cultivated specimen of the Tristan da Cunha plant has come to light, and it appears to be the same as *Cardamine flaccida*, Ch. et Schl. See remarks under the same genus, in the account of the botany of Juan Fernandez in Part III. of this work.

Linn., in Fuegia, the Falklands, &c. Carmichael records the plant, as given above, from "ravines on the side of the dome."

CARYOPHYLLEÆ.

Cerastium triviale, Link.

Cerastium triviale, Link., Enum. Pl. Hort. Bot. Berol., i. p. 433.
Cerastium vulgatum, Linn., Sp. Pl., 2d ed., i. p. 627; DC., Prodr., i. p. 415; Benth., Fl. Austr., i. p. 156.

Tristan da Cunha and Inaccessible Island. *Moseley.*

This very widely dispersed plant was most likely introduced, as neither Thouars nor Carmichael collected it. Mr Bentham, however, expresses the opinion that it is indigenous in Australia and Tasmania.

Polycarpon tetraphyllum, Linn.

Polycarpon tetraphyllum, Linn. f.; DC., Prodr., iii. p. 376; Benth., Fl. Austr., i. p. 163.

Tristan da Cunha.—Waste gravelly places—*Milne and MacGillivray; Moseley.*

Probably introduced since Carmichael's stay on the island. It is now very widely dispersed in all parts of the globe, except tropical Asia.

GERANIACEÆ.

Pelargonium australe, Willd., var. *acugnaticum.*

Pelargonium australe, Willd.; DC., Prodr., i. p. 654; Benth., Fl. Austr., i. p. 298, var. *acugnaticum*, Benth., l.c., p. 299.
Pelargonium acugnaticum, Thouars, Esquisse Fl. Trist., p. 44, t. 13 (species); Carmich. in Trans. Linn. Soc. Lond., xii. p. 507.

Tristan da Cunha. *Thouars; Carmichael; Moseley.* Inaccessible Island. *Moseley.*

One of the commoner plants in the lower parts of the islands, or at least in the island of Tristan da Cunha.

It is not possible to say from the specimens before us whether this form deserves specific rank. *Pelargonium australe* is an exceedingly variable species, and some of the small-flowered forms of it from New Zealand are very near *Pelargonium acugnaticum;* yet we have not seen any quite like it. Moseley's specimens are all in a flowerless condition, and Carmichael's, though bearing plenty of flowers, is without ripe fruit. Among other things, the sepals of the Tristan plant are proportionately longer and narrower, and lanceolate-acuminate in shape, and distinctly three-nerved.

Oxalis corniculata, Linn.

Oxalis corniculata, Linn.; DC., Prodr., i. p. 692; Benth., Fl. Austr., i. p. 301; Hook. f., Handb. Fl. N. Zeal., p. 38.

Tristan da Cunha.—Introduced?—*MacGillivray; Moseley.* Inaccessible Island. *Moseley.*

Oxalis corniculata is almost ubiquitous in temperate and sub-tropical countries, and extends into tropical regions in some places. It is regarded as indigenous in Australia and New Zealand and other southern countries.

RHAMNEÆ.

Phylica nitida, Lamarck. (Plate XXV.)

Phylica nitida, Lamarck, Encycl., ii. p. 77, n. 2613; DC., Prodr., ii. p. 35 (excl. syn. β *eriophora*); Harv. and Sond., Fl. Cap., i. p. 502; Velain in Griseb. Veg. du Globe (Édition Française, Tchihatchef), ii. p. 819.

Phylica arborea, Thouars, Esquisse Fl. Trist., p. 45; Carmich. in Trans. Linn. Soc. Lond., xii. p. 505.

Phylica mauritiana, Boj. in Baker Fl. Maurit., p. 53.

Tristan da Cunha, Inaccessible and Nightingale Islands. *Thouars; Carmichael; Moseley.*

Also in Amsterdam Island, Bourbon, and Mauritius, and perhaps Madagascar.

We agree with Mr Velain, *loc. cit.*, in regarding the Bourbon and Amsterdam Island *Phylicæ* as the same species; and we have no doubt that the Tristan da Cunha plant is likewise the *Phylica nitida* of Lamarck.

Thouars was aware of the close affinity of the Bourbon and Tristan da Cunha species of *Phylica*, for he has the following observation:[1] "Il a beaucoup de rapports avec celui qui croît sur les sommets élevés de Bourbon."

This shrub, or small tree, is polygamously diœcious, and varies considerably in foliage and general appearance at different stages of growth, especially in the Tristan da Cunha group itself. Bourbon specimens which we examined have rather smaller flowers, with shorter calyx lobes; otherwise there is less difference between them and some from Tristan da Cunha than between the specimens from the Tristan da Cunha group alone. We have seen no fruiting specimens either from the Mauritius or Bourbon.

ROSACEÆ.

Acæna sanguisorbæ, Vahl.

Acæna sanguisorbæ, Vahl, Enum., i. p. 294; Benth., Fl. Austr., ii. p. 434; Hook. f., Handb. Fl. N. Zeal., p. 56.

Acæna sarmentosa, Carmich. in Trans. Linn. Soc. Lond., xii. p. 502.

Ancistrum sarmentosum, Thouars, Esquisse Fl. Trist., p. 44.

Tristan da Cunha. *Thouars; Carmichael; Moseley; Milne and MacGillivray.* Inaccessible and Nightingale Islands. *Moseley.*

Also common in south-eastern Australia, Tasmania, New Zealand, the Aucklands, Campbell Island, and Amsterdam Island.

[1] Esquisse Fl. Trist., p. 46.

The genus *Acæna* is diffused all round the south temperate zone, and extends northward through the Andes to Mexico and Southern California: it is also represented in the Sandwich Islands. The species are most numerous in the extreme south of America; and one of these, *Acæna ovalifolia*, Ruiz and Pav., is very closely allied to the present.

UMBELLIFERÆ.

Hydrocotyle capitata, Thouars.

Hydrocotyle capitata, Thouars, Esquisse Fl. Trist., p. 43, t. 12; Carmich. in Trans. Linn. Soc. Lond., xii. p. 506.

Tristan da Cunha. *Thouars; Carmichael; MacGillivray and Milne; Moseley.* Inaccessible Island. *Moseley.*

Endemic in the group, and a very distinct species when normally developed, as in Carmichael's specimens, and Moseley's from Inaccessible Island, the larger leaves being from two to two and a half inches across; but the starved specimens collected by Milne and MacGillivray have leaves not more than a third of an inch across, and the plant resembles the New Zealand *Hydrocotyle moschata* in appearance. The leaves of Moseley's Tristan da Cunha plant are intermediate in size, the largest being about three quarters of an inch in their greatest diameter. In Carmichael's time, *Hydrocotyle capitata* was very common in the lower part of the main island. Both he and Mr Moseley have placed on record that the plant possesses the uncommon smell and taste of the carrot in a high degree. It is noteworthy that the greatest concentration of species of the widely spread genus *Hydrocotyle* is in the southern hemisphere, there being no fewer than twenty-six in Australia.

Apium australe, Thouars.

Apium australe, Thouars, Esquisse Fl. Trist., p. 43; Carmich. in Trans. Linn. Soc. Lond., xii. p. 506; Benth., Fl. Austr., iii. p. 372; Hook. f., Handb. Fl. N. Zeal., p. 90.

Tristan da Cunha. *Thouars; Carmichael; MacGillivray and Milne; Moseley.* Inaccessible Island. *Moseley.*

This plant is found all round the southern temperate zone, including many of the remote islets, and South Africa, and it varies very much in size, in the cutting of the leaves, and even in the size and consistence of the fruit. It is very closely allied to the northern celery (*Apium graveolens*), with which it was united in the Flora Antarctica, ii. p. 287, but afterwards separated by the author of the work cited in his Handbook of the Flora of New Zealand, and by Mr Bentham in the Flora Australiensis. This will explain the adoption of the name *Apium graveolens* for the Tristan da Cunha plant by Mr Moseley (Journ. Linn. Soc. Lond., xiv. p. 379), who had only the Flora Antarctica before him when writing the sketch of the vegetation of the islands.

RUBIACEÆ.

Nertera depressa, Gærtn.

Nertera depressa, Gærtn., Fruct. et Sem. Pl., i. p. 124, t. 26; Smith, Ic., ined., ii. t. 28; Bot. Mag., t. 5799; Carmich. in Trans. Linn. Soc. Lond., xii. p. 505; Hook. f., Handb. Fl. N. Zeal., p. 120; Benth., Fl. Austr., iii. p. 431.
Erythrodanum alsineforme, Thouars, Esquisse Fl. Trist., p. 42, t. 10 (*Nertera* in tab.)

Tristan da Cunha.—Everywhere, from the low grounds to the steepest cliffs—*Thouars;* in the most barren spots of the plain—*Carmichael; Moseley.* Inaccessible Island. *Moseley.*

All round the south temperate zone (though hitherto not found in South Africa), and in America, from Fuegia through the Andes to Mexico.

Nertera assurgens, Thouars.

Nertera assurgens, Thouars, Esquisse Fl. Trist., p. 42, t. 11; Carmich. in Trans. Linn. Soc. Lond., xii. p. 505.
Erythrodanum majus, Thouars, *loc. cit.*

Tristan da Cunha. *Thouars; Carmichael.* Inacessible and Nightingale Islands. *Moseley.*

Endemic in the group.

Like the majority of the undoubtedly indigenous plants, this occurs on all the islands of the group. It is very different from *Nertera depressa*, being much larger in all its parts; and it is also distinct from the four or five other species inhabiting Australia, New Zealand, Java, the Philippine Islands, and South America.

COMPOSITÆ.

Lagenophora commersonii, Cass.

Lagenophora commersonii, Cass. in Levrault Dict. Sc. Nat., xxv. p. 110; DC., Prodr., v. p. 307; C. Gay, Fl. Chil., iv. p. 32.
Calendula pusilla, Thouars, Esquisse Fl. Trist., p. 40, t. 9.
Lagenifera magellanica, Cass.; Carmich. in Trans. Linn. Soc. Lond., xii. p. 507.
Calendula magellanica, Willd., Sp. Pl., iii. p. 2344.

Tristan da Cunha.—On the sterile slope of the highest point reached—*Thouars;* on the dome, apparently rare—*Carmichael.*

Common in Chili, and also occurring in Fuegia and the Falkland Islands.

Thouars erroneously cites *Calendula pumila*, Forst. (*Lagenophora forsteri*, DC.), a common New Zealand plant, as a synonym of this.

Chevreulia stolonifera, Cass.

Chevreulia stolonifera, Cass.; DC., Prodr., vii. p. 45; Carmich. in Trans. Linn. Soc. Lond., xii. p. 507.
Xeranthemum cæspitosum, Thouars, Esquisse Fl. Trist., p. 39, t. 8.
Chevreulia thouarsii, Gay, Fl. Chil., iii. p. 332.

Tristan da Cunha.—Sufficiently common—*Thouars;* on the most barren spots of the plain—*Carmichael.*

Uruguay; Paraguay; Chili. Very common in the last-named country.

With this exception, the small genus *Chevreulia*, which may be regarded as *Gnaphalium* with opposite leaves, is restricted to South America, where it extends along the Andes from Chili to Ecuador.

Mr Moseley did not meet with either this or the preceding (*Lagenophora*), certainly indigenous *Compositæ.*

Gnaphalium pyramidale, Thouars. (Plate XXVI.)

Gnaphalium pyramidale, Thouars, Esquisse Fl. Trist., p. 40; Carmich. in Trans. Linn. Soc. Lond., xii. p. 507; DC., Prodr., vi. 234, non Berg.
Gnaphalium thouarsii, Spreng., Syst. Veg., iii. p. 473.

Endemic in the Tristan da Cunha group.

Tristan da Cunha. *Thouars; Carmichael; Moseley.* Inaccessible Island. *Moseley.*

Gnaphalium luteo-album, Linn.

Gnaphalium luteo-album, Linn.; DC., Prodr., vi. p. 230; Benth., Fl. Austr., iii. p. 653; Hook. f., Handb. Fl. N. Zeal., p. 154.

Tristan da Cunha and Inaccessible Island. *Moseley.*

Generally diffused in temperate and tropical regions, and perhaps accidentally conveyed to these islands.

Cotula australis, Hook.

Cotula australis, Hook. f., Fl. N. Zeal., i. p. 128, et Handb. Fl. N Zeal., p. 141; Benth., Fl. Austr., iii. p. 550; Hook. f., Fl. Tasm., t. 50.

Tristan da Cunha.—In pasture—*Milne and MacGillivray.*

Common in Australia and New Zealand, and perhaps also a native of South Africa.

Moseley (Journ. Linn. Soc. Lond., xiv. p. 381) mentions a species of *Cotula*, different from the one described below, as being common in Tristan da Cunha. It was probably this species, but no specimens came to hand.

The genus *Cotula*, although widely diffused in the northern hemisphere, is more specially characteristic of the flora of the south temperate zone, where the species are rather numerous.

Cotula moseleyi, n. sp. (Plate XXVII.)

Glabra, subcarnosa, habitu *Senecionis vulgaris* foliis bipinnatisectis, capitulis breviter pedunculatis, acheniis lævibus.

Herba annua (?) erecta, 5–8 poll. alta, ramosa. *Folia* sessilia, semiamplexicaulia, segmentis angustis acutis. *Capitula* folia vix superantia, 3–4 lineas diametro; involucri bracteæ biseriatæ, ovato-oblongæ, obtusæ vel rotundatæ, margine scariosæ et sublaceratæ; receptaculum concavum, foveolatum. *Flores* dimorphi, pauci exteriores ♀ pedicellati, corollis nullis; interiores sessiles, corollis cylindraceis. *Achenia* compressa, lævia, glabra, marginata.

Nightingale Island.—Endemic. Abundant—*Moseley.*

This species is near *Cotula anthemoides* and *Cotula australis*, differing from the former in its larger flower heads and shorter peduncles, and from the latter in its smooth achenes. It is a more robust plant, with thick, somewhat fleshy stems, like common groundsel.

Hypochæris glabra, Linn.

Hypochæris glabra, Linn.; DC., Prodr., vii. p. 90; Benth., Fl. Austr., iii. p. 677.

Tristan da Cunha.—Introduced? *Moseley.*

This species is now widely dispersed in the southern as well as the northern hemisphere, and it is regarded by Mr Bentham as indigenous in Australia, where it is common without the tropic. Nevertheless, it is almost certainly a recently introduced plant in Tristan da Cunha, for no previous traveller has recorded it from the island.

Sonchus oleraceus, Linn.

Sonchus oleraceus, Linn.; Hook. f., Handb. Fl. N. Zeal., p. 166; Benth., Fl. Austr., iii. p. 679.

Tristan da Cunha.—Introduced? Common on the plain—*Carmichael.* Inaccessible Island. *Moseley.*

The remarks under *Hypochæris glabra* apply equally to this species, which is now almost universally diffused except in the colder regions. Mr Bentham suggests that it may be truly indigenous in Australia; and Sir Joseph Hooker states (Handb. Fl. N. Zeal., p. 166) that his var. β (*Sonchus asper*, Fuchs) is certainly indigenous in New Zealand, having been found by Banks and Solander and Forster, and at Chalky Bay by Lyall, and in the interior of the Northern Island by Colenso, who says that it was formerly eaten by the natives.

CONVOLVULACEÆ.

Convolvulus soldanella? Linn.

Convolvulus soldanella? Linn., Sp. Pl., ed. 1, p. 159; Carmich. in Trans. Linn. Soc. Lond., xii. p. 505.

Tristan da Cunha. *Carmichael.*

This plant is widely spread on the sea-shores in the north and south temperate zones, and is not an unlikely one to have reached the islands. Unfortunately we have not succeeded in finding Carmichael's specimen in the Herbarium of the British Museum, where the first set of his collection is deposited. Carmichael states that he found it on the southeast side of the island growing in the sand close to the shore, and confined to a single spot. He regarded it as of recent introduction, "having in all likelihood been wafted to this shore by the current." It is, however, in none of the subsequent collections; but MacGillivray and Milne collected the almost equally widely dispersed allied species, *Convolvulus sepium*, Linn. (*Calystegia sepium*, R. Br.) in the island of St Paul, in great abundance, about fifty yards from the shore.

Moseley mentions (Journ. Linn. Soc. Lond., xiv. p. 380) that a *Convolvulus* was very abundant on cultivated ground near the huts of some Germans on Inaccessible Island. He assumed that it was introduced by them, and brought away no specimen.

CHENOPODIACEÆ.

Chenopodium tomentosum, Thouars. (Plate XXVIII.)

Chenopodium tomentosum, Thouars, Esquisse Fl. Trist., p. 38; Carmich. in Trans. Linn. Soc. Lond., xii. p. 505; DC., Prodr., xiii. 2, p. 74.

Ambrina tomentosa, Moq., Chenop. Monogr. Enum., p. 37.

Tristan da Cunha, Inaccessible, and Nightingale Islands. *Thouars; Carmichael; Milne and MacGillivray; Moseley.* Abundant.

This plant appears to be restricted to the Tristan da Cunha group. Moseley collected it in all three islands. Milne and MacGillivray note on their labels that it was common all over Tristan da Cunha, where it was used as tea; and this use is still kept up.

Atriplex plebeja, Carmich. (Plate XXIX.)

Atriplex plebeja, Carmich. in Trans. Linn. Soc. Lond., xii. p. 508; DC., Prodr., xiii. 2, p. 104.

Tristan da Cunha.—Endemic? *Carmichael.*

We have only seen the specimen collected by Carmichael, and he states that the plant grew along the shore, and seemed to be almost a stranger in the island. Probably an introduced plant, though we have not succeeded in identifying it. The fruit is unknown.

POLYGONACEÆ.

Rumex frutescens, Thouars. (Plate XXX.)

Rumex frutescens, Thouars, Esquisse Fl. Trist., p. 38; Carmich. in Trans. Linn. Soc. Lond., xii. p. 506; DC., Prodr., xiv. p. 72.

Tristan da Cunha and Inaccessible Island. *Thouars; Carmichael; Moseley.*

Endemic in these islands. Common all along the cliffs.

EMPETRACEÆ.

Empetrum nigrum, Linn., var. *rubrum.*

Empetrum nigrum, Linn., Sp. Pl., ed. 1, p. 1022, var. *rubrum.*

Empetrum rubrum, Vahl in Willd. Sp. Pl., iv. p. 713; Hook. f., Fl. Antarct., ii. p. 345; Gay, Fl. Chil., v. p. 350; Thouars, Esquisse Fl. Trist, p. 39.

Empetrum medium, Carmich. in Trans. Linn. Soc. Lond., xii. p. 508.

Tristan da Cunha, Inaccessible Island, Nightingale Island. *Thouars; Carmichael; Milne and MacGillivray; Moseley.*

South Chili; Fuegia; Falkland Islands.

Whether we regard this as a variety of the northern *Empetrum nigrum* (which is diffused all round the northern part of the temperate zone, as well as the Arctic zone), or as an independent species, its distribution is equally interesting. It is the only undershrub growing gregariously in the Tristan da Cunha group, where it is very abundant and where it finds its eastern limit.

MONOCOTYLEDONES.

JUNCACEÆ.

Juncus tristanianus, Hemsl.

Juncus tristanianus, Hemsl.

Species, ut videtur, *Junco bufonio* valde affinis, differt culmis elongatis filiformibus (aphyllis?) bracteolis minus scariosis, perianthii segmentis inter se æqualibus, seminibus utrinque obtusis, &c.

Tristan da Cunha.—Endemic. Boggy pastures—*MacGillivray.*

The specimens of this rush are very incomplete, but the culm and inflorescence are unlike any other species we have seen of the group to which it belongs. Each flower is subtended by two bracteoles within the bracts, and the long, pointed segments of the perianth are very much like those of *Juncus bufonius*, of which we at first thought it might be an extreme form. There are no leaves, and the portions of the very slender terete culms are about a foot long, with a terminal inflorescence not unlike that of the robust *Juncus bufonius.*

CYPERACEÆ.

Scirpus.

The forms of this genus in Tristan da Cunha and the neighbouring islets, Inaccessible and Nightingale, are numerous, and so closely allied, most of them, to each other, that it is a difficult and perplexing task to deal with them. Nearly a dozen of them have been described as species, or perhaps it would be more correct to say that about that number has been proposed, for some of the forms, doubtless, have been described under more than one name. Of the forms collected by Mr Moseley, Bœckeler described five as new species; only one of which, *Scirpus oliveri*, in our opinion, has any claim to that rank. These sedges are very abundant in the islands, growing in a variety of situations; hence, probably, the differences in habit, vigour, degree of fertility, and other characters which have been regarded as of specific value. We have devoted four plates to the illustration of some of the more distinct forms, which we reduce to four species; and we think it probable that a careful study of all the southern species would lead to the identification of some or all of the insular forms with some of the South African, Australian, or New Zealand species.

Scirpus sulcatus, Thouars. (Plate XXXI.)

Scirpus sulcatus, Thouars, Esquisse Fl. Trist., p. 36, t. 7, fig. dextra; Kunth, Enum., ii. p. 216.
Isolepis sulcata, Carmich. in Trans. Linn. Soc. Lond., xii. p. 503.
Isolepis carmichaelii, Dietr., Sp. Pl., ii. p. 107.
Scirpus thouarsii, Spreng., Syst. Veg. cur. post, p. 27.
Scirpus conspersus, Bœckel. in Linnæa, xxxvi. p. 505, *pro parte?*

Tristan da Cunha Group.—Endemic? *Thouars; Carmichael; MacGillivray; Moseley.*

This is perhaps the same as *Scirpus inundatus*, Spreng., as limited in Bentham's Flora Australiensis, vii. p. 329, and the *Isolepis prolifera*, Hook. f., Fl. Tasm., ii. p. 87, t. 144 (but not of R. Br.), is scarcely distinguishable from our plant.

Scirpus sulcatus, Thouars, var. *moseleyanus*, Hemsl. (Plate XXXII.)

Scirpus sulcatus, Thouars, var. *moseleyanus*, Hemsl.
Scirpus moseleyanus, Bœckeler in Flora, 1875, p. 262 (species).

Nightingale and Inaccessible Islands.—Endemic. *Moseley.*

At first sight this looks very different from typical *Scirpus sulcatus*, but after a careful examination we can come to no other conclusion than that it is a form of the same species. Among the specimens of undoubted *Scirpus sulcatus* from Tristan da Cunha, in Kew Herbarium, is one about four inches high, and the tallest is about twenty-eight inches. Between these extremes there is every gradation; and some of the plants collected by

Milne have culms nearly as slender as those of the present variety, though none is quite so slender. Independently of the extreme slenderness of *Scirpus moseleyanus*, it is also easily recognised by its deep red-brown leaf-sheaths. Whether this character be accidental or not cannot be proved from the one gathering before us, but specimens from both islands exhibit the same character. In one tuft, however, from Nightingale Island, which is proliferous, the colour has either flown or never was so prominent. The very small, sometimes almost obsolete, leaf-blade is much the same in both forms, as are also the glumes, the outer ones being remarkable for the very much thickened keel, which is prolonged into a stout mucro. The analysis of the flowers of the *Isolepis prolifera* of the Flora Tasmanica, ii. t. 144, also offers many points of resemblance; the glumes especially are almost exactly the same, those of our plant having similar red lines as well as the thickened keel. The flowers of *Scirpus moseleyanus*, of the plant figured, which we examined, were either monandrous or diandrous, and we met with one bifid style. This plant was collected in Inaccessible Island. Among the specimens collected in Nightingale Island were some of shorter, stouter growth, bearing more highly developed spikelets, in which nearly all the flowers examined were triandrous. Ripe nuts were not found.

Scirpus thouarsianus, Schult.

Scirpus thouarsianus, Schult. in Rœm. et Schult. Syst. Veg., ii. Mant., p. 84.
Scirpus prolifer, Thouars, Esquisse Fl. Trist., p. 36, t. 7, figura sinistra, non Rottb.
Isolepis prolifera, Carmich. in Trans. Linn. Soc. Lond., xii. p. 503.
Isolepis thouarsii, Dietr., Sp. Pl., ii. p. 109; Kunth, Enum., ii. p. 216.
Scirpus squarrosus, Spreng., Syst. Veg., cur. post., p. 28.
Isolepis acugnana, Schult. in Rœm. et Schult. Syst. Veg., iii. Mant., p. 532.
Isolepis squarrosa, Carmich. in Trans. Linn. Soc. Lond., xii. p. 503.
Scirpus prolifero-ramosus, Bœckeler in Flora, 1875, p. 261.

Tristan da Cunha.—Endemic. *Thouars; Carmichael; Moseley.*

We have not seen Thouars' type, and from his brief description and imperfect figure we cannot determine with certainty what particular form he had in view; but from his remarks on the distribution of the species, we assume that he considered all the forms known to him in the islands, except that which he described as *Scirpus sulcatus*, as one species. His words are: "This plant grows everywhere, in the dryest parts of the mountains, forming a short turf of a beautiful green." His figure agrees best with a small piece of the form which Bœckeler has designated *Scirpus prolifero-ramosus*. This was collected by Mr Moseley, both on the Main Island and on Inaccessible Island.

Scirpus thouarsianus, Schult., var. *bicolor*, Hemsl. (Plate XXXIV. B., figs. 8–16).

Scirpus thouarsianus, Schult., var. *bicolor*, Hemsl.
Scirpus bicolor, Spreng., Syst. Veg., cur. post, p. 28 (species).
Isolepis bicolor, Carmich. in Trans. Linn. Soc. Lond., xii. p. 503; Kunth, Enum., ii. p. 216.

Tristan da Cunha.—Endemic. *Carmichael; Milne and Macgillivray; Moseley.*

This variety, if it even deserve that rank, is dwarf and densely tufted, and the thick glumes are more distinctly two-coloured—green and brown—than in any other; otherwise it presents no tangible differences. A comparison of the analysis of the inflorescence of this with those of the other forms figured, teaches how very closely allied they all are. In all of them the glumes are rather thick, and in some of them, especially the proliferous conditions, they are almost fleshy. The lowermost one is more or less strongly two-ribbed longitudinally. The number of stamens and even stigmas is inconstant in the same spikelet, and therefore of no value whatever for distinguishing the different forms. The floral organs, indeed, seem to be usually in an abnormal condition, owing perhaps to the great tendency to prolification; and the plant seems to propagate itself vegetatively rather than sexually. Among the copious specimens collected by Mr Moseley, as well as those of previous collectors, we have not found one perfect nut. In this variety the number of stamens varies from one to three in the same spikelets, the number usually being less than three. With only two or three of the forms before us, we thought the characters afforded by the leaves would serve to distinguish them; but an examination of the whole series reveals a gradual transition from bladeless sheaths to leaves nearly as long as the culms. In this the relatively broad obtuse blade is longer than the sheath and sometimes as long as the culms. The dwarf, densely tufted specimens in Mr Moseley's collection, which Bœckeler named "*Scirpus bicolor*," and which are as near typical *Scirpus bicolor* as any that we have seen, yet as different from it as some of the so-called species are from each other, have very broad and thick leaves, sometimes longer and sometimes shorter than the culms. All of them, too, exhibit a decided tendency to prolification, though it is never developed in so marked a degree as in some of the other forms. The whole plant, or growths, for some of the culms develop several successive tufts of leaves and branches one above the other, varies from one inch to three or four inches in height, and the inflorescence varies from one or two small spikelets to a very dense globose head composed of very numerous spikelets.

Scirpus thouarsianus, Schult., var. *virens*, Hemsl. (Plate XXXIII., figs. 7-12.)

Scirpus thouarsianus, Schult., var. *virens*, Hemsl.
Scirpus virens, Bœckeler in Flora, 1875, p. 261 (species).

Inaccessible and Nightingale Islands.—Endemic. *Moseley.*

Bœckeler describes the leaves as somewhat acute, the spikelets as 7–3 together and 20–12-flowered, the stamens as two in number, and the nut as exceedingly minute, &c. The plants are six to eight inches high, and slenderer than *Scirpus pallescens*, represented on the same plate in figs. 1–6 as *Scirpus virens;* the leaves are much shorter than the culms, though the blade is longer than the sheath, and rather more obtuse than in figure 7. The culms are, many of them, perhaps half of them, quite barren; others bear one, two, or three, few-flowered spikelets, and the remainder more and larger spikelets up

to the numbers indicated by Bœckeler. This variety is remarkable for the great number of flowers in the larger spikelets, surpassing all the others in this respect. As to the number of stamens, there are sometimes only two, and probably also sometimes only one in the imperfectly developed spikelets; but in the larger spikelets, such as figure 9 represents, we found the number of three to predominate. The nuts we found were imperfect, though not remarkably small. The style was very deeply divided in the flowers examined.

Scirpus thouarsianus, Schult., var. *pallescens*, Hemsl. (Plate XXXIII. A, figs. 1–6.)

Scirpus thouarsianus, Schult., var. *pallescens*, Hemsl.
Scirpus pallescens, Bœckeler in litt., fide D. Oliver in Herb. Kew.

Nightingale Island.—Endemic. *Moseley.*

Bœckeler does not appear to have published any description of this form, which is remarkable for its coarse almost wholly barren culms. Where there are spikelets, there is always prolification. The blade of the leaf bears about the same proportion to the sheath as it does in *Scirpus virens;* the glumes are somewhat thicker, and the few flowers found were diandrous, with the style scarcely divided to the middle. A comparison of the analyses of the flowers of this and *Scirpus virens* suggests the question;—Does the basal part of the style elongate after the stage represented by figure 11? The filaments certainly do. The small nut is very minutely reticulated, but not so prominently as in fig. 6, whereas that of *Scirpus virens* (fig. 12) appeared to be quite smooth; both were empty and imperfect, and the shapes given in the drawings were taken from single nuts in the condition indicated.

Scirpus oliveri, Bœckeler. (Plate XXXIV. A, figs. 1–7).

Scirpus oliveri, Bœckeler in Flora, 1875, p. 260.

Inaccessible Island.—Endemic. *Moseley.*

This very slender species has strongly keeled glumes, not unlike those of *Scirpus sulcatus;* but it is quite distinct in its long setaceous acute leaves and bracts, &c. Bœckeler describes the flowers as monandrous, while those we examined were triandrous; doubtless the number of stamens varies in this as in the others.

Scirpus sp.

Scirpus aucklandicus, Bœckeler in litt., vix *Isolepis aucklandica*, Hook. f.

Tristan da Cunha.—Endemic? *Milne and MacGillivray; Moseley.*

The general appearance of this is that of *Scirpus setaceus*, from which, however, it is very distinct. On the other hand, it looks equally distinct from the original *Isolepis aucklandica*, but not being able to study carefully all the southern *Scirpi* of this group, we will not venture to give it a new name.

Carex insularis, Carmich.

Carex insularis, Carmich. in Trans. Linn. Soc. Lond., xii. p. 508; Boott, Carices, iii., p. 111, t. 350.
Carex spicis pluribus masculis femineis pedunculatis, Thouars, Esquisse Fl. Trist., p. 36.

Tristan da Cunha.—In the plain—*Carmichael.* Inaccessible Island. *Moseley.*

Endemic in the group.

Carex thouarsii, Carmich.

Carex thouarsii, Carmich. in Trans. Linn. Soc. Lond., xii. p. 508; Boott, Carices, iv., p. 176, t. 595.
Carex spicis confertis sessilibus hermaphroditis, Thouars, Esquisse, Fl. Trist., p. 36.

Tristan da Cunha.—In the plain—*Carmichael; MacGillivray.* Nightingale Island. *Moseley.*

Endemic in the group.

Uncinia brevicaulis, Thouars, var. *robustior*, Hemsl. (Plate XLV.)

Uncinia brevicaulis, Thouars, Esquisse Fl. Trist., p. 35, t. 6, var. *robustior*, Hemsl.
Uncinia breviculmis, Carmich. in Trans. Linn. Soc. Lond., xii. p. 508.
Uncinia gracilis β, C. B. Clarke in Journ. Linn. Soc. Lond., xx. p. 400.

Tristan da Cunha. *Thouars; Carmichael.*

Also in St. Paul and Amsterdam Islands.

Mr C. B. Clarke (Journ. Linn. Soc. Lond., xx. p. 400) combines *Uncinia gracilis*, Thouars, with *Uncinia breviculmis*, Carmich. (the name *Uncinia brevicaulis*, Thouars, being omitted) and *Uncinia macloviana*, Gaud., under the name *gracilis*, defining, however, three varieties. We prefer keeping the South American form as a distinct species, because it is easily recognised by its narrower utricles, which considerably overtop the bracts; but Thouars' two species can at the most be regarded as varieties of one. By some oversight Mr Clarke has confused the two forms. He cites Carmichael's *Uncinia breviculmis* under what he regards as typical *Uncinia gracilis;* while his β *gracilis* is evidently a slip, and should have been, according to Thouars' plate, quoted β *brevicaulis.* With regard to the relative length of leaves and culms, Clarke says of his β, "Culmi (in eadem planta) foliis multo breviores aut multo longiores." The specimen in question bears the culms of two seasons, one of the culms belonging the former season being longer than the present leaves; yet in all probability, judging from the other specimens of the species we have seen, the leaves of the same season were longer than the culm. From some cause the growth of the plant was not so vigorous the year the specimen was collected as it had been the year before, hence the disparity in the length of the culms. Carmichael, loc. cit., doubtingly unites Thouars' two species, and states that the culm greatly elongates after flowering. This is so unlikely that we think he likewise may have been deceived by relative length of previous years' culms.

Uncinia brevicaulis, var. *gracilior*, Hemsl. (Plate XLVI.)

Uncinia brevicaulis, var. *gracilior*, Hemsl.
Uncinia gracilis, Thouars, Esquisse Fl. Trist., p. 35, t. 5 (excl. synon.); C. B. Clarke in Journ. Linn. Soc. Lond., xx. p. 400, partim.

Tristan da Cunha. *MacGillivray and Milne; Thouars.*

This variety has only been collected in Tristan da Cunha, and presents no marked differences beyond greater slenderness.

GRAMINEÆ.[1]

Spartina arundinacea, Carmich. (Plate XXXV.)

Spartina arundinacea, Carmich. in Trans. Linn. Soc. Lond., xii. p. 504; Kunth, Enum., i. p. 279; Reichardt in Verhandl. k. k. zool.-bot. Gesellsch. Wien, xxi. p. 31.
Ponceletia arundinacea, Thouars, Esquisse Fl. Trist., p. 36.

Tristan da Cunha. *Thouars; Carmichael; MacGillivray and Milne; Moseley.* Inaccessible and Nightingale Islands. *Moseley.*

Also in the islands of St Paul and Amsterdam.

This robust reed-like grass constitutes one of the main features of the vegetation of the islands, and grows in such dense thickets as to be almost impenetrable in places.

Agrostis ramulosa, Carmich. (Plate XXXVI.)

Agrostis ramulosa, Carmich. in Trans. Linn. Soc. Lond., xii. p. 504; Steud., Synop. Glum., i. p. 175.
Agrostis carmichaeli, Schultes in Rœm. et Schult. Syst. Veg., ii. Mant., p. 571.
Sporobolus? carmichaeli, Kunth, Gram., i. p. 68, et Enum., i. p. 216.
Vilfa carmichaeli, Steud., Nomencl. Bot.

Tristan da Cunha.—Endemic. *Carmichael; MacGillivray.*

According to Carmichael, this grass and *Agrostis media* grow on the high part of the mountain, forming the chief part of its herbage. A few straggling tufts were met with on the low ground, along the bottom of the ravines, where the seeds had been washed down by the torrents. It is not in the more recent collections that we have seen.

Although the awn on the flowering glume is reduced to a mere rudiment, this is no justification for removing it from the genus *Agrostis;* moreover, it cannot be regarded as other than a congener of *Agrostis media.*

Agrostis media, Carmich. (Plate XXXVII.)

Agrostis media, Carmich. in Trans. Linn. Soc. Lond., xii. p. 504; Rœm. et Schult., Syst. Veg., ii. Mant., p. 571; Kunth, Enum., i. p. 226.

Tristan da Cunha.—Endemic. *Carmichael; Milne; Moseley.*

[1] Several introduced grasses have now become common; they are mentioned in the introductory notes preceding this enumeration.

Associated with *Agrostis ramulosa* on the high part of the mountain, where these two grasses formed the chief part of the herbage in Carmichael's time.

These two species of *Agrostis* are very distinct, and are not very closely allied to any others except our *Agrostis delislei* from Amsterdam Island.

Polypogon intermedius, Carmich.

Polypogon intermedius, Carmich. in Trans. Linn. Soc. Lond., xii. p. 504.
Phalaris mollis, Thouars, Esquisse Fl. Trist., p. 37.

TRISTAN DA CUNHA. *Thouars.*

When at the British Museum we omitted looking up Carmichael's specimen; but Mr Ridley has obligingly done so, and he writes: "I have looked at the *Polypogon*, which seems to be of the *Polypogon monspeliensis* section, near *Polypogon napalensis*, but with larger flowers. It is rather a stout plant for a *Polypogon*, and seems to be a distinct species."

Phalaris cespitosa, Thouars.

Phalaris cespitosa, Thouars, Esquisse Fl. Trist., p. 37.

"Panicula pauciflora subspicata, culmo repente stolonifero."

TRISTAN DA CUNHA. *Thouars.*

Thouars's name is not taken up by either Kunth or Steudel, nor does Carmichael include it in his enumeration, and we have no clue to its affinity. The author states that this grass alone sometimes covers large spaces of ground, and to the above brief diagnosis he adds: "Épi long d'un pouce." There is nothing in the collections either of MacGillivray and Milne, or of Moseley, corresponding to this.

CRYPTOGAMÆ.—VASCULARES.

LYCOPODIACEÆ.

Lycopodium diaphanum, Swartz.

Lycopodium diaphanum, Swartz, Synop. Fil., p. 179; Desv., Ann. Soc. Linn. Par., vi. p. 182; Carmich. in Trans. Linn. Soc. Lond., xii. p. 509; Hook. and Grev., Ic. Fil., t. 227; Spring, Monogr. Lycopod., partie 1, p. 93, partie 2, p. 44; Kuhn, Fil. Afr., p. 184.
Lepidotis diaphana, Pal. Beauv. Prodr., p. 108; Thouars, Esquisse Fl. Trist., p. 30.
Lycopodium clavatum, Thouars, Esquisse Fl. Trist., p. 30.

TRISTAN DA CUNHA.—Endemic. *Thouars; Carmichael.*

This species, which is closely allied to *Lycopodium clavatum*, is remarkable for the long tails to the leaves and bracts.

Carmichael states that it grows indiscriminately on the dome, the face of the tableland, and the plain; and that it attains a length of several fathoms. Further he says that the leaves end in a white filament, which gives the plant, in the fresh state, a silky feel.

Lycopodium magellanicum, Swartz.

Lycopodium magellanicum, Swartz, Synop. Fil., p. 180; Desv., Ann. Soc. Linn. Par., vi. p. 184; Spring, Monogr. Lycopod., partie 1, p. 96, partie 2, p. 46; Carmich. in Trans. Linn. Soc. Lond., xii. p. 509; Kuhn, Fil. Afr., p. 185.

Tristan da Cunha.—On the side of the dome—*Carmichael.*

Common in the cold temperate zone of the southern hemisphere wherever there is land.

In a broad sense this is only a variety of the generally diffused *Lycopodium clavatum*, Linn.

Lycopodium saururus, Lam.[1]

Lycopodium saururus, Lam., Encycl. Bot., iii. p. 653; Swartz, Synop. Fil., p. 176; Spring., Monogr. Lycopod., partie 1, p. 21, et partie 2, p. 6.
Lycopodium insulare, Carmich. in Trans. Linn. Soc. Lond., xii. p. 509.
Lycopodium axillare, Roxb. in Beatson's St Helena Tracts, p. 312.

Tristan da Cunha.—On the sides of the ravines—*Carmichael.* Nightingale Island. *Moseley.*

A very widely dispersed species. See the remarks on it in the preceding account of the plants of St Helena (p. 91).

FILICES.

POLYPODIEÆ.

Hymenophyllum æruginosum, Carmich. (Plate XXXVIII.)

Hymenophyllum æruginosum, Carmich. in Linn. Trans. (1818), xii. p. 513; Desv. in Mém. Soc. Linn., Par., 1822–27, p. 332; Hook., Sp. Fil., i. p. 94, excl. var. β et t. 34, A.; Hook. and Bak., Synop. Fil., p. 64; Kuhn,[2] Fil. Afr., p. 38.
Trichomanes æruginosum, Poiret in Lamarck, Encycl., viii. p. 76; Thouars, Esquisse Fl. Trist., p. 34.

Tristan da Cunha.—Endemic. *Thouars; Carmichael; MacGillivray; Moseley.*

Hymenophyllum æruginosum is most nearly allied to *Hymenophyllum franklinianum*, a New Zealand species, and *Hymenophyllum lanceolatum* and *Hymenophyllum obtusum*, the

[1] Spring referred *Lycopodium insulare*, Carmich., and *Lycopodium axillare*, Roxb., to *Lycopodium selago*, Linn. var. *spinulosum*, Spring; and Kuhn (Fil. Afr., p. 186) follows him; but Baker (MSS. in Herb. Kew) refers them to the present species.

[2] Kuhn (Fil. Afr., p. 38) cites *Trichomanes hirsutum*, Thouars, as a synonym of *Hymenophyllum capillare*, Desv. (*Hymenophyllum lineare*, Swartz), a species not found in the Tristan da Cunha group. It is clear, however, that Thouars had only one species in view, and although he described it as new and named it *Trichomanes æruginosum*, he thought it might be the same as *Trichomanes hirsutum*, Linn., hence he added Linnæus' name and diagnosis with a note of interrogation.

last of which occurs in Amsterdam Island, as well as South Africa, the Sandwich Islands, and New Guinea. Kuhn records it from the Cape of Good Hope ("Hb. Hooker"), but this probably arose from a misreading of Mettenius's notes.

Trichomanes tenerum, Spreng.

Trichomanes tenerum, Spreng., Syst. Veg., iv. p. 129; Hook. and Bak., Synop. Fil., p. 85.
Trichomanes angustatum, Carmich. in Trans. Linn. Soç. Lond., xii. p. 513; Hook., Sp. Fil., i. p. 141; Kuhn, Fil. Afr., p. 32; Hook. and Grev., Ic. Fil., t. 166.

Tristan da Cunha.—On rocks—*Carmichael;* in boggy ground—*MacGillivray and Milne.*

Common in Tropical America, from Mexico to Peru and Brazil. There are copious specimens of this fern in Kew Herbarium from Tristan da Cunha, yet Mr Moseley did not collect it in either of the islands; therefore we presume it must be rare. Kuhn retains the Tristan da Cunha plant as specifically distinct from the American without giving his reasons; but we have followed the Synopsis Filicum, as some of the American specimens are so like the insular ones as to be undistinguishable from them, by external characters at least.

Adiantum æthiopicum, Linn.

Adiantum æthiopicum, Linn., Sp. Pl., ed. 2, p. 1560; Hook., Sp. Fil., ii. p. 37, t. 77, A.; Hook. and Bak., Synop. Fil., p. 123; Kuhn, Fil. Afr., p. 62; Carmich. in Trans. Linn. Soc. Lond., xii. p. 513; Thouars, Esquisse Fl. Trist., p. 34.
Adiantum assimile, Swartz, Synop. Fil., pp. 125 et 322, t. 3, fig. 4.
Adiantum thalictroides, Willd.; Linnæa, x. p. 530; Kuhn, Fil. Afr., p. 66.

Tristan da Cunha.—In ravines, abundant—*Thouars; Carmichael; Moseley.* Inaccessible Island. *Moseley.*

Texas, California, Spain, and South India southward to Chili; Buenos Ayres, Cape of Good Hope, and New Zealand.

Melliss notes (St Helena, p. 351) that it is commonly grown in gardens in St Helena, and becoming wild in some localities.

Pteris incisa, Thunb.

Pteris incisa, Thunb., Prodr. Fl. Cap., p. 733; Hook., Sp. Fil., ii. p. 230; Hook. and Bak., Synop. Fil., p. 172; Kuhn, Fil. Afr., p. 82.
Pteris vespertilionis δ carmichaeliana, Agardh, Rec. Sp. Gen. Pter., p. 80.
Pteris vespertilionis β, R. Br. ex Carmich. in Trans. Linn. Soc. Lond., xii. p. 513.

Tristan da Cunha.—In the wood, not common—*Carmichael;* forming tussocks in a very wet bog—*MacGillivray and Milne.* Inaccessible and Nightingale Islands. *Moseley.*

The species has a very wide range; the variety is peculiar to these islands.

Lomaria alpina, Spreng.

Lomaria alpina, Spreng., Syst. Veg., iv. p. 62; Hook. f., Fl. Antarctica, ii. p. 393, t. 150; Hook., Sp. Fil., iii. p. 16; Hook., Fil. Exot., t. 32; Hook. and Bak., Synop. Fil., p. 178.
Lomaria pennamarina, Mett., ex Kuhn, Fil. Afr., p. 92, et Baker in Mart. Fl. Bras., fasc. xlix. p. 414.
Polypodium pennamarina, Poir. in Lam. Encycl., v. p. 520.
Blechnum pennamarina, Kuhn, Fil. Afr., p. 92.
Lomaria antarctica, Carmich. in Trans. Linn. Soc. Lond., xii. p. 513.
Acrostichum polytrichoides, Thouars, Esquisse Fl. Trist., p. 32, t. 2 (*polypodioides*).

Tristan da Cunha.—On the most barren parts of the plain—*Carmichael;* abundant in pasture land—*MacGillivray and Milne; Moseley.*

The distribution of this fern is very interesting and unusual. It is abundant in Temperate South America, in the Alps of Australia, and in Tasmania; it is one of the characteristic ferns of New Zealand and the neighbouring islands, and it is found in nearly all the other southern islands and islets, from Juan Fernandez round to the Falklands, including Marion Island, the Crozets, Kerguelen, St Paul, and Amsterdam Islands. In the Tristan da Cunha group, however, it has only been found in Tristan da Cunha itself. What is more remarkable in its distribution is its absence from South Africa, especially if the records of its occurrence in South Brazil are trustworthy, but of this there is some doubt. In the Kew Herbarium there are specimens—very vigorous ones—with the fertile fronds nearly two feet long, purporting to have been collected in Brazil by Sello and Glaziou. There are also well-authenticated specimens from Arigue in Valdivia, and in Australia it has been collected as far north as the Macleay river in New South Wales.

Another fact worthy of consideration is the close relationship existing between *Lomaria alpina* and *Lomaria spicant*, which has a similar range of distribution in the northern hemisphere, descending to Syria, Madeira, and the Canaries. A comparison of the forms of the two species reveals such an amount of parallelism and close affinity, that one can arrive at no other conclusion than that they are separated races of a common ancestor.

Lomaria boryana, Willd.

Lomaria boryana, Willd., Sp. Pl., v. p. 292; Hook and Bak., Synop. Fil., p. 180.
Lomaria magellanica, Desv. in Mag. Nat. Berl., 1811, p. 330, et in Mém. Soc. Linn. Par., vi. p. 289; Hook. f., Fl. Antarctica, ii. p. 393; Hook, Sp. Fil., iii. p. 26.
Pteris palmæformis, Thouars, Esquisse Fl. Trist., p. 30.
Lomaria palmæformis, Desv. in Mém. Soc. Linn. Par., vi. p. 290.
Lomaria robusta, Carmich. in Trans. Linn. Soc., xii. p. 512.
Blechnum tabulare, Kuhn, Fil. Afr., p. 94.

Tristan da Cunha. *Thouars; Carmichael; Milne and MacGillivray; Moseley.*

This remarkable fern ranges from the West Indies to the Straits of Magellan and the Falkland Islands, and from Angola to the Cape of Good Hope, occurring also in Bourbon, Mauritius, and Madagascar. The Tristan da Cunha form, which has only been found in

the one island of the group, is very distinct, and deserves the rank of an independent species more than many forms retained as such. It is remarkable for the great substance of its fronds, and for the rhachis being densely clothed throughout with large, chaffy scales, while in the ordinary form it is naked. It is further the most striking member of the order inhabiting the island, being the only one that is arboreous in habit of growth; hence Thouars's specific name of "*palmæformis*." The author named states that the caudex is sometimes two feet high and four inches in diameter; and Carmichael, whose notes are in most instances much too short, writes as follows: "This beautiful fern is more generally scattered than most of the others, being found in all moist places from the tableland down to the plain. The trunk grows to the length of four or five feet, sometimes erect, but usually lying on the ground, with its apex only upright. Though not above two inches in diameter, the stumps of the decayed fronds, with their thick scaly covering attached to it, give it an apparent diameter of eight or nine inches. It is crowned with numerous stiff fronds, from one to three feet in length, according to the age and situation of the plant. The barren fronds form a spreading circle, within which, in the summer, five or six fertile fronds shoot up in a perpendicular tuft."

Blechnum australe, Linn.

Blechnum australe, Linn., Mant., i. p. 130; Swartz, Synop. Fil., p. 114; Hook., Sp. Fil., iii. p. 56; Hook. and Bak., Synop. Fil., p. 186; Carmich. in Trans. Linn. Soc. Lond., xii. p. 512; Thouars, Esquisse Fl. Trist., p. 33; Kuhn, Fil. Afr., p. 91.
Blechnum hastatum, Kaulf. Enum. Fil., p. 161.

Tristan da Cunha.—In ravines—*Carmichael; MacGillivray and Milne; Moseley.*

Inaccessible Island. *Moseley.*

Temperate South America, South Africa, Madagascar, Bourbon, St. Paul, and Ascension?

Asplenium obtusatum, Forst.

Asplenium obtusatum, Forst., Prodr., p. 80; Hook., Sp. Fil., iii. p. 96; Hook., Fil. Exot., t. 46; Hook. and Bak., Synop. Fil., p. 207.
Asplenium obliquum, Forst., l. c.; Schk., Krypt. Gewächse, t. 71; Kuhn, Fil. Afr., p. 109; Carmich. in Trans. Linn. Soc. Lond., xii. p. 512.
Asplenium crassum, Thouars, Esquisse Fl. Trist., p. 33.

Tristan da Cunha.—In the wood—*Carmichael; Moseley.* Nightingale and Inaccessible Islands. *Moseley.*

As limited in Hooker and Baker's Synopsis, this is an exceedingly variable species, including the very different-looking *Asplenium lucidum*, Forst.; and it is very common in Australia, New Zealand, and Polynesia, occurring also in Peru and Chili. The form found in the Tristan da Cunha group is much the same as that represented in Hooker's Filices Exoticæ, t. 46, and the same one has lately been collected in the Crozets by Captain J. N. East.

Asplenium lunulatum, Swartz.

Asplenium lunulatum, Swartz, Synop. Fil., p. 80; Hook. and Bak., Synop. Fil., p. 202.
Asplenium erectum, Bory in Willd. Sp. Pl., v., p. 328; Hook., Sp. Fil., iii. p. 126, t. 178.
Asplenium insulare, Carmich. in Trans. Linn. Soc. Lond., xii. p. 512.
Asplenium marinum, Linn.? Thouars, Esquisse Fl. Trist., p. 34.

Tristan da Cunha.—In the wood—*Carmichael.* Inaccessible and Nightingale Islands. *Moseley.*

The form found in these islands of this variable and widely dispersed fern is quite small, having fronds only three to five inches long. For more extended synonymy and distribution, see the enumeration of St Helena plants (p. 95).

Asplenium monanthemum, Linn.

Asplenium monanthemum, Linn., Mant., i. p. 130 (*monanthes*); Murr., Syst. Veg., ii., 2, p. 1302 (*monanthemum*); Forst., Comment. Gœtt. ix. p. 73 (reprint, p. 63); Smith, Ic., ined., t. 73; Hook., Sp. Fil., iii. p. 140; Hook and Bak., Synop. Fil., p. 197; Kuhn, Fil. Afr., p. 107; Carmich. in Trans. Linn. Soc. Lond., xii. p. 512.

Tristan da Cunha.—In ravines—*Carmichael; Moseley.*

Common in America, from Arizona, Mexico, and West Indies to Chili; in Madeira, the Canaries, and other African islands, including Fernando Po; also in Abyssinia and South Africa.

Asplenium (Athyrium) medium, Hook.

Asplenium (Athyrium) medium, Hook., Sp. Fil., iii. p. 227; Hook. and Bak., Synop. Fil., p. 225; Hook., 2nd Cent. Ferns, t. 43; Kuhn, Fil. Afr., p. 106.
Aspidium medium, Carmich. in Trans. Linn. Soc. Lond., xii. p. 511.
Athyrium medium, Moore, Ind. Fil., ii. p. 96.
Aspidium internubium, Carmich., MSS. in Herb. Kew.

Tristan da Cunha.—Endemic. On the tableland—*Carmichael.*

A well-marked species, of which we have only seen the specimens collected by Carmichael in 1816.

Asplenium pyramidatum, Desv.

Asplenium pyramidatum, Desv. in Ann. Soc. Linn., vi. p. 271; Mett., Aspl., n. 81, b; Moore, Ind. Fil., p. 159; Hook., Sp. Fil., iii. p. 164; Kuhn, Fil. Afr., p. 114.

Tristan da Cunha?

This is a doubtful plant of uncertain origin.

Diplazium proliferum, attributed to Thouars by Kuhn (Fil. Afr., p. 112), is a name not mentioned by the former. It is a synonym of *Asplenium decussatum*, Swartz, a species having a wide range, though hitherto not found in South Africa nor in the Tristan da Cunha group.

Nephrodium aquilinum, Hemsl. (Plate XXXIX.)

Nephrodium aquilinum, Hemsl.
Polypodium aquilinum, Thouars, Esquisse Fl. Trist., p. 32; Hook., Sp. Fil., iv. p. 270; Hook. and Baker, Synop. Fil., ed 2., p. 311.
Polypodium acunhianum, Carmich. MSS. in Herb. Kew.
Phegopteris aquilina, Mett. ex Kuhn, Fil. Afr., p. 121.

Tristan da Cunha, Inaccessible and Nightingale Islands. *Thouars; Carmichael; Milne and MacGillivray; Moseley.*

Also in Amsterdam Island, according to Fournier in his account of the ferns collected there by one of the French expeditions.

Nephrodium tomentosum, Desv.

Nephrodium tomentosum, Desv. in. Mém. Soc. Linn. Par., vi. p. 256; Hook. and Bak., Synop. Fil., p. 269.
Polypodium tomentosum, Thouars, Esquisse Fl. Trist., p. 32, t. 3.
Aspidium bifidum, Carmich. in Trans. Linn. Soc. Lond., xii. p. 511.
Nephrodium (Lastrea) conterminum, Desv., *β thouarsianum*, Hook., Sp. Fil., iv. p. 91.
Aspidium riparium, Bory ex Kuhn, Fil. Afr., p. 140.
Aspidium resinosum, Carmich. MSS. in Herb. Kew.

Tristan da Cunha.—Without locality—*Carmichael; Moseley.*

Madagascar; Mauritius; Bourbon.

By an oversight apparently, this species is reduced to *Polypodium aquilinum* in Hooker's Species Filicum. This arose probably from a mistaken identification of a specimen of Carmichael's collecting, and named by him *Polypodium acunhianum*, with *Nephrodium tomentosum*, for we find this name on one of the sheets. Several of Carmichael's ferns bear different manuscript names from those under which they were ultimately published.

Aspidium coriaceum, Swartz.

Aspidium coriaceum, Swartz, Prodr. Fl. Ind. Occ., p. 133, et Synop. Fil., p. 57; Hook., Sp. Fil., iv. p. 32; Lowe, Ferns, vi. p. 36; Kuhn, Fil. Afr., p. 128; Carmich. in Trans. Linn. Soc. Lond., xii. p. 511.
Aspidium capense, Willd., Sp. Pl., v. p. 267; Hook. and Bak., Synop. Fil., p. 254; Lowe, Ferns, vi. t. 40.
Polypodium calyptratum, Thouars, Esquisse Fl. Trist., p. 33.

Tristan da Cunha.—On the face of the tableland—*Carmichael;* without locality—*Moseley.*

Widely spread in Tropical and Temperate South America, in Africa, Mascarene Islands, Polynesia, Australia, and New Zealand.

Carmichael states that he found only one plant, and suggests that it might be a stranger. Moseley collected good specimens; but the fronds bearing sori were only about four inches high, while a specimen collected in Amsterdam Island by De l'Isle is nearly three feet high.

Polypodium punctatum, Thunb.

Polypodium punctatum, Thunb., Fl. Jap., p. 337; Hook. and Bak., Synop. Fil., p. 312 (*β rugulosum*).
Polypodium (*Phegopteris*) *rugulosum*, Labill., Fl. Nov. Holl., ii. p. 92, t. 241; Hook., Sp. Fil., iv. p. 272; Roxb. in Beatson's St Helena Tracts, p. 318.
Hypolepis punctata, Mett. ex Kuhn, Fil. Afr., p. 120.
Cheilanthes viscosa, Carmich. in Trans. Linn. Soc. Lond., xii. p. 511.
Polypodium villosoviscidum, Thouars, Esquisse Fl. Trist., p. 33.

Tristan da Cunha.—In the wood, rather common—*Carmichael;* without locality, or other remarks—*Thouars.*

This species, as limited by Hooker and Baker, and by Kuhn, has a very wide area of distribution in South America; in Asia, from Japan southward; in Australia, and in New Zealand, and it is also found in Madagascar, Bourbon, Fernando Po, and St Helena, though hitherto it has not been detected on the continent of Africa.

Polypodium (Grammitis) australe, Mett.

Polypodium (*Grammitis*) *australe*, Mett., Polypod., p. 36; Hook., Sp. Fil., iv. p. 166; Hook. and Bak., Synop. Fil., p. 322; Kuhn, Fil. Afr., p. 146.
Grammitis australis, R. Br., Prodr. Fl. Nov. Holl., p. 146; Carmich. in Trans. Linn. Soc. Lond., xii. p. 510; Hook. f., Fl. Antarctica, i. p. iii. and ii. p. 393.
Grammitis magellanica, Desv., Journ. Bot., iii. p. 275.
Asplenium angustifolium, Jacq., Collect., i. p. 121; Ic. Pl. Rar., t. 199.

Tristan da Cunha.—On the tableland and rocky borders of the ravines—*Carmichael.*

Southern extremity of America and the neighbouring islands; Australia, as far north as Queensland; New Zealand, and neighbouring islands; and in Marion Island.

Gymnogramme cheilanthoides, Kaulf.

Gymnogramme cheilanthoides, Kaulf., Enum. Fil., p. 71; Hook., Sp. Fil., v. p. 135; Hook. and Grev., Ic. Fil., t. 24; Kuhn, Fil. Afr., p. 60.
Grammitis cheilanthoides, Swartz, Synop. Fil., pp. 23, 219, et 419; Carmich. in Trans. Linn. Soc. Lond., xii. p. 510.
Asplenium filipendulæfolium, Thouars, Esquisse Fl. Trist., p. 34, t. 4.
Gymnogramme filipendulæfolia, Desv., Journ. Bot., 1813, p. 25.

Tristan da Cunha.—Endemic. High on the face of the tableland, and on a detached hill in the middle of the plain—*Carmichael.*

Of this very distinct fern we have only seen the specimens collected by Carmichael. Swartz erroneously, as it would seem, recorded it as a native of the Mauritius, and he has been copied by most subsequent writers. It must be very rare in Tristan da Cunha, or recent travellers would certainly have collected it, as it is exceedingly elegant, and quite different from anything else in the group.

Vittaria (Tæniopsis) stricta, Carmich.

Vittaria (Tæniopsis) stricta, Carmich. in Trans. Linn. Soc. Lond., xii. p. 513; Hook., Sp. Fil., v. p. 182; Hook. and Bak., Synop. Fil., p. 396.
Pteris vittarioides, Thouars, Esquisse Fl. Trist., p. 31, t. 1.
Vittaria revoluta, Willd. ex Kaulf., Enum. Fil., p. 194; Kuhn, Fil. Afr., p. 56.

Tristan da Cunha.—Endemic. In the wood—*Carmichael.* Inaccessible and Nightingale Islands. *Moseley.*

This should perhaps be united with the widely-spread *Vittaria lineata.*

Acrostichum (Elaphoglossum) conforme, Swartz.

Acrostichum (Elaphoglossum) conforme, Swartz, Synop. Fil., pp. 10 et 192, t. 1, fig. 1; Hook., Sp. Fil., v. p. 198; Hook. and Bak., Synop. Fil., p. 401; Kuhn, Fil. Afr., p. 43; Carmich. in Trans. Linn. Soc. Lond., xii. p. 509.
Acrostichum laurifolium, Thouars, Esquisse Fl. Trist., p. 31.

Tristan da Cunha.—In the wood—*Carmichael; Menzies; Thouars.*

Generally diffused in warm countries.

Acrostichum hybridum, Bory.

Acrostichum hybridum, Bory, Voy., iii. p. 95; Swartz, Synop. Fil., p. 11; Hook., Sp. Fil., v. p. 210; Hook. and Bak., Synop. Fil., p. 403; Kuhn, Fil. Afr., p. 45.
Acrostichum ciliare, Thouars, Esquisse Fl. Trist., p. 328?; Carmich. in Trans. Linn. Soc. Lond., xii. p. 510.

Tristan da Cunha.—On the mouldering banks of the ravines—*Carmichael; Thouars.*

Mexico to Brazil, Tropical and Subtropical South Africa, and Mascarene Islands.

Acrostichum spathulatum, Bory.

Acrostichum spathulatum, Bory, Voy. dans les quatres princ. îles des mers d'Afr., i. p. 363, t. 20, fig. 1; Hook. and Bak., Synop. Fil., p. 408; Kuhn, Fil. Afr., p. 47.
Elaphoglossum spathulatum, Bedd., Ferns S. Ind., p. 71, t. 213.
Acrostichum obtusatum, Carmich. in Trans. Linn. Soc. Lond., xii. p. 510; Kuhn, Fil. Afr., p. 46.
Acrostichum piloselloides, Presl, *β obtusatum*, Hook., Sp. Fil., v. p. 227; Hook., Fil. Exot., t. 29; Hook. and Grev., Ic. Fil., t. 22.

Tristan da Cunha.—On the highest rocks of the tableland—*Carmichael.*

Widely dispersed in Tropical America, also in South Africa, Ceylon, and the Mascarene Islands.

Kuhn retains *Acrostichum obtusatum*, Carmich., as a distinct species, restricted to Tristan da Cunha; but there is no ground for it, and Kuhn most likely never saw Carmichael's specimens, the only ones recorded from the island.

Acrostichum succisæfolium, Thouars.

Acrostichum succisæfolium, Thouars, Esquisse Fl. Trist., p. 30; Carmich. in Trans. Linn. Soc. Lond., xii. p. 510; Hook., Sp. Fil., v. p. 241; Hook. and Grev., Ic. Fil., t. 2; Kuhn, Fil. Afr., p. 48; Hook. and Bak., Synop. Fil., p. 408.
Olfersia succisæfolium, Presl., Tent. Pterid., p. 235.
Elaphoglossum succisæfolium, Moore, Ind. Fil., p. 368.
Acrostichum ciliatum, Desv., Journ. Bot., iii. p. 273.
Acrostichum macropodium, Carmich. MSS. in Herb. Kew.

Tristan da Cunha.—In the wood—*Carmichael;* without note—*MacGillivray and Milne; Moseley.* Inaccessible and Nightingale Islands. *Moseley.*

Thouars records this species from Mauritius, but we have seen no specimen from that island. It is abundant, however, in Amsterdam Island.

OPHIOGLOSSACEÆ.

Ophioglossum vulgatum, Linn.

Ophioglossum vulgatum, Linn., Sp. Pl., ed. 1, p. 1062, var.; Hook. and Bak., Synop. Fil., p. 445.
Ophioglossum opacum, Carmich. in Trans. Linn. Soc. Lond., xii. p. 509; R. Br. ex Kuhn, Fil. Afr., p. 178.
Ophioglossum bulbosum, Baker in Trans. Linn. Soc. Lond., xxvi. p. 344, non Michx.

Tristan da Cunha.—High up on the dome—*Carmichael.*

Taken in the wide sense assigned to it in Hooker and Baker's Synopsis Filicum, this is perhaps the most widely spread of all ferns, both in cold and warm countries; but the form found in Tristan da Cunha and St Helena is a very distinct one in appearance, and if constantly so deserving of specific rank.

Kuhn (l. c. p. 179) records, on the authority of Mettenius, *Ophioglossum reticulatum*, Linn., from Tristan da Cunha; but this seems to have arisen from some error.

CRYPTOGAMÆ.—CELLULARES.

MUSCI.[1]

Physcomitrium (Aphanoregma) brevisetum, Mitt.

Physcomitrium (Aphanoregma) brevisetum, Mitt. in Journ. Linn. Soc. Lond., xv. p. 65.

Inaccessible Island.—Growing on the ground—*Moseley.*

Caulis innovationibus repetitis dichotome ramosus. *Folia* superiora obovato-oblonga, acuta vel brevissime apiculata, nervo infra apicem evanido, margine apicem versus serrulata,

[1] By William Mitten., A.L.S.

cellulis hexagono-oblongis versus folii apicem brevioribus areolata. *Theca* in pedunculo brevi globoso-pyriformis, ore truncato magno, operculo perfecte conico, calyptra longirostris, basi plurifida, laciniis ad operculi basin descendentibus.

Caulis 1–2 c.m. altus. Folia 2–2, 50 mm. longa, satis firma, viridia. Pedunculus 1 mm. parum longior.

Very different from most of the known species of this group by its taller stem, but in other respects not different.

Aphanorhegma serrata, Sullivant, the typical species of the group to which *Physcomitrium brevisetum* belongs, and which it very nearly resembles, so nearly agrees in appearance with *Physcomitrella patens*, that the specimens collected by Drummond were distributed with that name—*Phascum patens*, and it really only differs in the fruit in the same way as *Phascum bryoides* differs from *Pottia*. And although this character — the closed capsule—seems well marked in some species of mosses, there occur species in which the operculum is well defined, and it becomes difficult to know whether it falls off in the usual manner or is persistent.

Besides *Physcomitrium serratum*, there are the *Physcomitrium immersum*, Sull., from the United States, *Physcomitrium pusillum*, Hook. f. et Wils., from New Zealand, *Physcomitrium cyathicarpum*, Mitt., from North-West India, *Physcomitrium cubense*, Mitt., from Cuba, and *Physcomitrium niloticum*, Del., from Egypt, and another South African species collected by Capt. Rooper at East London—*Physcomitrium rooperi: Theca* subglobosa operculo parvo distincte limitato persistente? calyptra ad medium thecæ descendens, folia suprema apiculata apicem versus serrulata. And *Physcomitrium giberti: Physcomitrium immerso*, simillimum sed foliis magis spathulato-oblongis et thecâ a basi lata versus orem angustata calyptrâ operculum planiusculum apiculo parvo tantum obtegente, Uruguay.—M. Gibert. All these species are closely allied to each other in size and mode of growth; they are in Europe represented by *Physcomitrella patens*, which is most usually a very little less in stature; such species are generally supposed to be very short lived. It is certain that *Physcomitrella patens* is able to come to maturity in three or four months in situations covered at other times by water, but it is in some situations more than an annual species.

Ditrichum conicum, Mitt.

Aschistodon conicum, Mont., Ann. Sc. Nat., ser. 3, iv. 109, et Syll. Crypt., p. 42.
Cynontodium conicum, Mitt., Musc. Aust. Am., in Journ. Linn. Soc. Lond., xii. p. 44.
Leptotrichum montagnei, C. Müll., Synop. Musc. Frond., i. p. 448.

Tristan da Cunha. *Moseley.*

Tall stems, barren, but to all appearance the same as specimens from South Chili.

Campylopus introflexus, Mitt.

Campylopus introflexus, Mitt., Musc. Austr. Am. in Journ. Linn. Soc. Lond., xii. p. 84.
Dicranum introflexum, Hedw., Sp. Musc., p. 147, t. 29.

Tristan da Cunha. *Moseley.*

The fertile specimens are very small and short stemmed; the species is exceedingly variable both in size and colour.

This species abounds throughout the southern hemisphere, and in Europe it extends as far north as the south coast of Britain, and in America as far as Alabama.

Campylopus arcuatus, Mitt.

Campylopus arcuatus, Mitt. in Journ. Linn. Soc. Lond., xv. p. 61.
Dicranum arcuatum, Brid., Bryol. Univ., i. p. 463; C. Müll., Synop. Musc. Frond., i. p. 388.

Tristan da Cunha.—Barren stems intermixed with a tall state of *Campylopus introflexus—Moseley.*

Campylopus vesticaulis, Mitt.

Campylopus vesticaulis, Mitt. in Melliss's St Helena, p. 357.

Tristan da Cunha.—Endemic. Collected in plenty by MacGillivray and Milne.

It is allied to the preceding, but differs in its leaves.

Ceratodon purpureus, Brid.

Ceratodon purpureus, Brid., Bryol. Univ., i. p. 480; C. Müll., Synop. Musc. Frond., i. p. 646.
Mnium purpureum, Linn., Sp. Pl., 1575.

Tristan da Cunha.—A few fertile stems growing with *Marchantia polymorpha. Moseley.*

A cosmopolitan moss.

Grimmia (Dryptodon) membranacea, Mitt.

Grimmia (Dryptodon) membranacea, Mitt. in Journ. Linn. Soc. Lond., xv. p. 61.

Tristan da Cunha.—Endemic. On rocks—*Moseley.*

This moss is closely related to the *Grimmia symphyodon*, C. Müller, and although it differs a little in the apices of its leaves, it may be but one form of a widely distributed austral species.

Hymenostylium (Gymnostomum) calcareum, Nees et Hornsch.

Gymnostomum calcareum, Nees et Hornsch., Bry. Germ., i. p. 10.

Tristan da Cunha.—A few barren stems intermixed with *Bryum mègalacrion. Moseley.*

It is probably a cosmopolitan species.

Macromitrium acutirameum, Mitt.

Macromitrium acutirameum, Mitt. in Journ. Linn. Soc. Lond., xv. p. 62.

TRISTAN DA CUNHA.—Endemic. A small barren specimen—*Moseley.*

Not nearly related to any known South African species, for from the areolation of its leaves it is probably referable to the section *Goniostoma* in all the described African forms of which the apex of the leaves is not mucronate. It is nearer the New Zealand *Macromitrium aristatum.*

Macromitrium fimbriatum, Schwägr.

Macromitrium fimbriatum, Schwägr., Suppl. ii. 1, p. 37, t. 111; C. Müll., Synop. Musc. Frond., i. p. 739.

TRISTAN DA CUNHA. *Thouars.*

Mauritius?

Philonotis (Bartramia) capillata, Mitt.

Philonotis (*Bartramia*) *capillata*, Mitt. in Journ. Linn. Soc. Lond., xv. p. 62.

TRISTAN DA CUNHA.—Endemic. On wet sandy earth—*Moseley.*

The specimens of this moss have young setæ, but the capsules are unformed; in appearance it seems to be similar to the New Zealand *Philonotis tenuis*, Tayl., and it differs from most of the numerous South African species, many of which are only yet known in a barren state, by its narrow long-pointed leaves, which remain in the same position when dry as they are when wet. The stout fruit-stalk seems to indicate its having a capsule of the normal form of *Philonotis.*

Bartramia (Plagiomela) radicosa, Mitt.

Bartramia (*Plagiomela*) *radicosa*, Mitt. in Journ. Linn. Soc. Lond., xv. p. 62.

TRISTAN DA CUNHA.—Endemic. Growing on coarse sand in loose tufts—*Moseley.*

Bartramia inconspicua, Mitt.

Bartramia inconspicua, Mitt. in Journ. Linn. Soc. Lond., xv. p. 62.

TRISTAN DA CUNHA.—Endemic. With the preceding—*Moseley.*

Species of this group are numerous in South Africa, but of many the perfect fruit has not been seen, so that it is impossible to assign to them the exact place in the arrangement, which depends on the position and smoothness or plication of the capsule.

Bryum truncorum, Brid.

Bryum truncorum, Brid., Mant. Musc., p. 119 ; C. Müll., Synop. Musc. Frond., i. p. 254.

Tristan da Cunha and Inaccessible Islands. *Moseley.*

South Africa and Mascarene Islands.

Bryum megalacrion, Schwägr.

Bryum megalacrion, Schwägr., Suppl. i. 2, p. 104, t. 71 ; C. Müll., Synop. Musc. Frond., i. p. 312.

Tristan da Cunha.—Forming wide patches ; specimens bearing only old capsules and in a bad state—*Moseley.*

Mauritius and Rodriguez.

Bryum julaceum, Sm.?

Bryum julaceum, Sm., Fl. Brit., p. 1357? C. Müll., Synop. Musc. Frond., i. p. 315, et. ii. p. 577.

Tristan da Cunha. *Moseley.*

Some very small barren stems belong to this or some very closely allied species.

Daltonia sp.

Tristan da Cunha. *Moseley.*

A single fragment proves the existence of a species which cannot be determined.

Stereodon cupressiformis, Brid.

Stereodon cupressiformis, Brid., Bryol. Univ., ii. p. 605 ; C. Müll., Synop. Musc. Frond., ii. p. 289.
Hypnum cupressiforme, Linn., Sp. Pl., ed 2, p. 1592.

Tristan da Cunha.—Barren. *Moseley.*

In some form this species appears to be present throughout the world ; but it seems to be more abundant in Europe than elsewhere.

Ptychomnion densifolium, Mitt.

Hypnum densifolium, Brid., Sp. Musc., ii. p. 204 ; C. Müll., Synop. Musc. Frond., ii. p. 442.

Tristan da Cunha.—Endemic. *Thouars ; Moseley.*

As usual, all the specimens are barren ; it closely resembles *Ptychomnion aciculare*, but its foliage is more dense and more recurved.

Meiothecium urceolatum, Mitt.

Pterogonium urceolatum, Schwägr., Suppl. ii. 1, p. 33, t. 110.
Neckera urceolata, C. Müll., Synop. Musc. Frond., ii. p. 77.

Tristan da Cunha.—Endemic. *Thouars.*

Hypnum (Pleuropus) bonplandii, C. Müll.

Hypnum bonplandii, C. Müll., Synop. Musc. Frond., ii. p. 463.
Leskea bonplandii, Hook. in Kunth., Synop. Pl. Æq., i. p. 61, et Musc. Exot., t. 55.

Tristan da Cunha.—One small barren specimen—*Moseley.*

This moss would appear to be very widely dispersed. Originally described from the Peruvian Andes, it has since been found in South Africa and described as *Hypnum pseudosalebrosum*, Hampe, and *Leucodon sericeus*, Hornsch.; in India, whence Montagne described it as *Isothecium nilgheriense*, and Griffith as *Pleuropus fenestratus;* and the *Hypnum wilkesianum*, Sull., from the Pacific Islands, is probably the same, for specimens have been seen from Hawaii. It is the largest species of the group, to which Schimper applied the name of *Homalothecium*, and, like the *Hypnum sericeum*, according to the circumstances affecting its growth, varies not a little in size and appearance.

Hypnum (Rhynchostegium) raphdiorrhynchum, C. Müll.

Hypnum (Aptychus) raphidorrhynchum, C. Müll., Synop. Musc. Frond., ii. p. 354.

Tristan da Cunha.—Fragments only—*Moseley.*

South Africa.

Thuidium curvatum, Mitt.

Thuidium curvatum, Mitt. in Melliss's St Helena, p. 365.

Tristan da Cunha.—Endemic. Small barren stems—*Moseley.* Originally discovered by MacGillivray and Milne.

Very closely resembling the New Zealand *Thuidium fulvastrum*, and differing chiefly in the shorter cauline leaves, which are more papillose and not plicate.

Fissidens asplenioides, Sw.

Fissidens asplenioides, Sw.; Hedw., Musc. Frond., iii. 65, t. 28; C. Müll., Synop. Musc. Frond., i. p. 69.

Tristan da Cunha. *Moseley.*

Without fruit, but agreeing with specimens of this species which is found over a vast area. Originally described from the West Indies, it is the *Fissidens flabellatus*, Hornsch., and the *Fissidens stipitatus*, Angstr., from Brazil; the *Fissidens turbinatus*, Taylor, from the Andes, and the species is found also in Australia and in Java as well as in the Atlantic Islands.

Eustichia longirostris, Brid.

Eustichia longirostris, Brid., Bryol. Univ., ii. 674; C. Müll., Synop. Musc. Frond., i. p. 42.
Didymodon distichus, Schwägr., t. 183.
Diplostichum longirostrum, Mont. in Ann. Sc. Nat., ser. 3, iv. p. 116, et Syll. Crypt., p. 67.
Cymbaria jamesoni, Tayl. in Hook. Lond. Journ., vii. p. 190.
Eustichia jamesoni, C. Müll., Synop., ii. p. 523.

Tristan da Cunha.—Short barren stems intermixed with other terrestrial mosses—*Moseley.*

This curious and elegant moss is now known to grow in South Africa, where it has been gathered by Dr Rehmann, as well as in Madagascar and Chili.

Polytrichum juniperinum, Hedw.

Polytrichum juniperinum, Hedw., Sp. Musc., p. 89, t. 13; C. Müll., Synop. Musc. Frond., i. p. 218.
Polytrichum tristani, Duby, Choix de Mousses exotiques nouvelles ou mal connues in Mém. Soc. Phys. et Hist. Nat. Genève, 1875, t. xxiv.?

Tristan da Cunha.—Barren stems only—*Moseley.*

Specimens of this cosmopolitan moss were gathered in fruit by Milne. They present no differences from European specimens.

HEPATICÆ.[1]

Plagiochila infuscata, Mitt.

Plagiochila infuscata, Mitt. in Journ. Linn. Soc. Lond., xv. p. 63.

Tristan da Cunha.—Endemic. On earth or rocks—*Moseley.* Gathered also by Milne in a very slender state.

A small and slender species, with its foliage not shrinking away when dry. In colour and look it would seem to be near to *Plagiochila terebrans*, Nees, Lindenb., t. 20, and *Plagiochila pectinata* (Willd.), Lindenb. t. 2, but from both it differs in its shorter and wider leaves, which in outline come nearer to those of *Plagiochila spinulosa*, having the two apical teeth larger and more distinct.

Jungermannia colorata, Lehm et Lindenb.

Jungermannia colorata, Lehm et Lindenb.; G. L. et N., Synop. Hepat., pp. 86 et 673.

Tristan da Cunha.—In extensive patches, but all barren—*Moseley.*

Generally diffused in the southern hemisphere.

Lophocolea serrata, Mitt.

Lophocolea serrata, Mitt. in Melliss's St Helena, p. 368, t. 56b, et Journ. Linn. Soc. Lond., xv. p. 64.

Tristan da Cunha.—Endemic. Creeping amongst *Bryum megalacrion*—*Moseley*; amongst *Fissedens asplenioides*—*Milne.*

[1] By William Mitten, A.L.S.

Lophocolea inconspicua, Mitt.

Lophocolea inconspicua, Mitt. in Journ. Linn. Soc. Lond., xv. p. 64.

TRISTAN DA CUNHA.—Endemic. On the earth amongst mosses, chiefly *Bryum megalacrion—Moseley.*

A very small, dull, olive-brown coloured species; it appears to belong to that group of the *Lophocoleæ* which have bidentate leaves on some portions of their stems, but with the leaves near the perianth entire.

Chiloscyphus lucidus, Mitt.

Chiloscyphus lucidus, Mitt. in Journ. Linn. Soc. Lond., xv. p. 64.

TRISTAN DA CUNHA.—Endemic. Growing on the earth amongst moss—*Moseley.*

This in foliage resembles many species of *Lophocolea* which are generally similar to the European *Lophocolea bidentata*, but its perianth is borne on a lateral branch, and is of small size, its apex subtruncate, and there it is trigonous, below it is terete.

Lepidozia procumbens, Mitt.

Lepidozia procumbens, Mitt. in Melliss's St Helena, p. 369.

TRISTAN DA CUNHA.—Endemic. Only collected by MacGillivray and Milne.

Lejeunia parasitica, Tayl.

Lejeunia parasitica, Tayl. in Hook. Lond. Journ. Bot. 1884, p. 477; G. L. N., Synop. Hepat., p. 377.

TRISTAN DA CUNHA.—In very small quantity creeping on *Grimmia membranacea—Moseley.*

It appears to be the same as the species collected in the Falkland, Lord Auckland, and Campbell Islands.

Pallavicinius procumbens, Mitt.?

Diplolæna procumbens, Tayl.? in Hook. Lond. Journ. Bot. 1845, p. 93; G. L. N., Synop. Hepat., p. 477 (*Blyttia*).

TRISTAN DA CUNHA. *Moseley.*

Barren fronds of this or some very nearly allied species were found creeping amongst *Bryum megalacrion.*

Previously only known from St Helena.

Asterella hemisphærica, Beauv.

Asterella hemisphærica, Beauv. in Dict. Sc. Nat., iii. p. 258; Mitt. in Journ. Linn. Soc. Lond., xv. p. 65.

Reboulia hemisphærica, Raddi; G. L. N., Synop. Hepat., p. 548.

Tristan da Cunha.—Imperfectly fruited specimens—*Moseley*.

A very widely diffused plant.

Marchantia polymorpha, Linn.

Marchantia polymorpha, Linn., Sp. Pl., ed. 2, p. 1603; G. L. N., Synop. Hepat., p. 522; Taylor in Hook. Lond. Journ. Bot., 1844, p. 400.

Tristan da Cunha. *Moseley*.

Almost cosmopolitan.

Anthoceros plicatus, Mitt.

Anthoceros plicatus, Mitt., n. sp., in Journ. Linn. Soc. Lond., xv. p. 65.

Frondes procumbentes, lobati, planiusculi, marginibus incurvis squamulis minutis limbatis; involucrum apice dilatatum, infundibuliforme, fructus brevis, decurvus, plicis longitudinalibus striatus.—*Anthoceros lævis*, Mitt. in Journ. Linn. Soc. Lond., xv. p. 65, non Linn.

Frondes 2–3mm. lati, post exsiccationem atrati. *Fructus* cum involucro 2–3mm. longus.

Tristan da Cunha.—Endemic. Growing on the ground in the same manner as *Anthoceros lævis—Moseley*.

The greater portion of the specimen of this species is without fruit, but on a small piece a few rather young fruits have been found. These resemble the similar parts of the genus *Notothylas*, but they show a distinct involucre as usual in *Anthoceros;* the fruit itself is distinctly plicate, but too young to show in what manner it opens, and the spores are not fully formed. The margin of the fronds appears to have the very small scales as if in several rows.

Thouars (Esquisse Fl. Trist., pp. 27–30) enumerates eleven Hepaticæ and twenty-three Musci, most of which are clearly the same as those collected by later travellers, whilst the rest are doubtful. We are not aware that Thouars's collection was ever revised.

LICHENES.

LICHENACEI.

Stereocaulei.

Stereocaulon mixtum, Nyl.

Stereocaulon mixtum, Nyl., Synop. Lich., i. p. 238; Crombie in Journ. Linn. Soc. Lond., xvi. p. 222.

Tristan da Cunha. *Moseley*.

West Indies; Mexico; New Grenada; Bolivia; Sandwich Islands.

RAMALINEI.

Ramalina yemenensis (Acharius), Nyl.

Ramalina yemenensis (Acharius), Nyl., Monogr. Ramal., p. 46; Crombie in Journ. Linn. Soc. Lond., xvi. p. 222.

INACCESSIBLE ISLAND. *Moseley.*

Arabia; India; Java; South Africa; South America; Australia; New Zealand.

Ramalina intermedia, Del.

Ramalina intermedia, Del. in Nyl. Monogr. Ramal., p. 68; Crombie in Journ. Linn. Soc. Lond., xvi. p. 222.

INACCESSIBLE ISLAND. *Moseley.*

Central and Western Europe; North America; Rodriguez.

PARMELIEI.

Parmelia perforata, Acharius.

Parmelia perforata, Acharius, Meth. Lich., p. 217; Nyl., Synop. Lich., i. p. 377; Crombie in Journ. Linn. Soc. Lond., xvi. p. 222.

TRISTAN DA CUNHA and INACCESSIBLE ISLANDS. *Moseley.*

Western Europe; America; South Africa; Polynesia; Australia.

Parmelia perlata, Acharius.

Parmelia perlata, Acharius, Meth., p. 216; Nyl., Synop. Lich., i. p. 379; Crombie in Journ. Linn. Soc. Lond., xvi. p. 222.

TRISTAN DA CUNHA. *Moseley.*

Parmelia revolutella, Nyl.

Parmelia revolutella, Nyl. in Journ. Linn. Soc. Lond., xvi. p. 222.

TRISTAN DA CUNHA.—Endemic. On trees? very sparingly seen—*Moseley.*

STICTEI.

Stictina intricata, var. *thouarsii*, Nyl.

Stictina intricata, var. *thouarsii*, Nyl., Synop. Lich., i. p. 335; Crombie in Journ. Linn. Soc. Lond., xvi. p. 222.

Sticta thouarsii, Del., Stict., n. 25, t. 8, fig. 9; Bory in Duperr., Voy. "Coquille," Bot. Crypt., p. 236.

TRISTAN DA CUNHA. *Thouars; Moseley.*

The species is widely diffused.

LECANOREI.

Lecanora subfusca, var. *granulata*, Nyl.

Lecanora subfusca, var. *granulata*, Nyl., Lich. Antill., p. 11; Crombie in Journ. Linn. Soc. Lond., xvi. p. 222.

INACCESSIBLE ISLAND.—Apparently common—*Moseley*.

Guadaloupe.

Lecanora (Placopsis) gelida, Linn.

Lecanora (Placopsis) gelida, Linn.; Acharius, Lich. Univ., p. 428; Crombie in Journ. Linn. Soc. Lond., xvi. p. 222.

TRISTAN DA CUNHA. *Moseley*.

North-West Europe; Greenland; Fuegia; Kerguelen; New Zealand.

Lecanora acunhana, Nyl.

Lecanora acunhana, Nyl. in Journ. Linn. Soc. Lond., xvi. p. 222. ‡

TRISTAN DA CUNHA.—Endemic. On rocks, very sparingly seen—*Moseley*.

"Species bene distincta videtur in stirpe *Lecideæ dispersæ*," Nylander.

Thouars (Esquisse Fl. Trist., p. 26) enumerates sixteen lichens, and his enumeration is repeated here for what it is worth:—

Lichen viridiflavus, Thouars. = *Sticta crocata*, Acharius.
Lichen tenellus, Thouars, n. sp.
Lichen pubescens, Thouars, n. sp.
Lichen xerampelinus, Thouars, n. sp.
Lichen gelatinosus, Thouars. = *Collema*, Acharius.
Lichen sp., Thouars.
Lichen caninus, Linn. = *Peltidea canina*, Acharius.
Lichen centrifugus, Linn. = *Parmelia centrifuga*, Acharius.
Lichen farinaceus, Linn. = *Parmelia farinacea*, Acharius.
Lichen caperatus, Linn. = *Parmelia caperata*, Acharius.
Lichen scyphifer, Linn. = *Bœomyces pyxidatus*, Acharius.
Lichen gracilis, Linn. = *Bœomyces gracilis*, Acharius.
Lichen paschalis, Linn. = *Stereocaulon paschale*, Acharius.
Lichen vulpinus, Linn. = *Parmelia vulpina*, Acharius.
Lichen plicatus, Linn. = *Usnea plicata*, Acharius.
Lichen sp.

FUNGI.

HYMENOMYCETES.

AGARICINI.

Agaricus (Pholiota) phylicigena, Berkl.

Agaricus (Pholiota) phylicigena, Berkl. in Journ. Linn. Soc., xv. p. 52.

Pileo convexo carnoso areolato fulvo, primum lævissimo; stipite crasso sursum

attenuato, deorsum incrassato infra annulum crassum mobilem transversim flocculoso; lamellis leviter decurrentibus argillaceis.

Tristan da Cunha group.—Endemic. On trunks of *Phylica nitida—Moseley.*

Pileus three inches or more across, convex, at first very smooth and even, at length repeatedly areolate with a depressed wart on each division, margin turned up; stem excentric, attenuated upwards, thick and swollen below, solid, about two inches high, one and a quarter inch or more thick in the centre; ring thick, very soon detached, and movable; gills moderately broad, crowded, clay-coloured, decurrent, edge pale; spores oblong oblique, about ·0003 inch long, but variable in size.

Very nearly allied to *Agaricus capistratus*, Cooke, but differs in several points, especially in the incrassated stem. There is a misprint in Cooke's description of that species, the figure being quite correct.

ASCOMYCETES.

Pyrenomycetes.

Hypoxylon placentæforme, Berkl. et Curt.

Hypoxylon placentæforme, Berkl. et Curt. in Journ. Linn. Soc. Lond., x. p. 383, et Berkl. in Journ. Linn. Soc. Lond., xv. p. 52.

Tristan da Cunha.—On dead *Phylica—Moseley.*

Also in Cuba.

Thouars (Esquisse Fl. Trist., p. 25) enumerates four fungi, namely—*Merulius* sp., "hemispherical, laterally attached to the trunks of trees;" *Agaricus* sp., "a small species laterally attached to the rotten trunks of trees;" *Sphæria* sp. (probably *Hypoxylon placentæforme*); and *Peziza* sp., "orbicular, purplish above, villous beneath."

ALGÆ.

MELANOSPERMEÆ.

Laminariaceæ.

Macrocystis pyrifera, K. A. Agardh.

Macrocystis pyrifera, K. A. Agardh, Sp. Alg., i. p. 47; Kütz., Sp. Alg. p. 582; Dickie in Journ. Linn. Soc. Lond., xiv. p. 384; Harv., Phyc. Austr., t. 202.

Fucus pyrifer, Linn.; Thouars, Esquisse Fl. Trist., p. 25.

Tristan da Cunha. *Thouars; MacGillivray; Moseley.*

All round the Southern Ocean; California, as far south as San Francisco; Unalaschka; Sitcha; China.

The distribution of this gigantic seaweed in the Southern and Pacific Oceans only is noteworthy.

Ectocarpaceæ.

Sphacelaria paniculata, Suhr.

Sphacelaria paniculata, Suhr; J. G. Agardh, Sp. Alg., i. p. 36; Dickie in Journ. Linn. Soc. Lond., xiv. p. 384.
Stypocaulon paniculatum, Kütz., Sp. Alg., p. 467.

Tristan da Cunha. *Moseley.*

Common on the coast of New Zealand and Australia, and also found in Southern Chili.

Rhodospermeæ.

Rhodomelaceæ.

Dasya obscura, Dickie.

Dasya obscura, Dickie, n. sp., in Journ. Linn. Soc. Lond., xiv. p. 384.

Fronde, ramis ramulique densis, subspongiosa, pinnatim ramosa, ramis alternis; rhachi polysiphonia, sursum longius corticata; ramulis densissime dichotomis obtusis; stichidiis lanceolatis breviter pedunculatis.

Tristan da Cunha.—Endemic. *Moseley.*

Only one specimen two to three inches long.

Corallinaceæ.

Arthrocardia corymbosa, J. G. Agardh.

Arthrocardia corymbosa, J. G. Agardh, Sp. Alg., ii. p. 550; Dickie in Journ. Linn. Soc. Lond., xiv. p. 386.
Corallina corymbosa, Lamark in Mém. Mus. Par., ii. p. 234.
Amphiroa corymbosa, Dcne. in Ann. Sc. Nat., sér. 2, xviii. p. 124; Harv., Nereis Austr., p. 99, t. 38; Kütz., Sp. Alg., p. 703.

Inaccessible Island. *Moseley.*

Cape of Good Hope; New Zealand.

Kützing, loc. cit., by mistake, probably, cites "ad oras Americæ" for this species.

Sphærococcoideæ.

Nitophyllum undulatum, Kütz.

Nitophyllum undulatum, Kütz.; Dickie in Journ. Linn. Soc. Lond., xiv. p. 385.

Tristan da Cunha. *Moseley.*

Cape of Good Hope.

Mr Moseley's specimens are not in very good condition, and they are very dwarfed, yet they have both coccidia and tetraspores, and seem to belong to the species mentioned.

Rhodymeniaceæ.

Plocamium coccineum, Kütz.

Plocamium coccineum, Kütz., Phyc. Gener., p. 442, t. 64, et Sp. Alg., p. 883; Dickie in Journ. Linn. Soc. Lond., xiv. p. 385.
Fucus plocamium, Gmel.; Thouars, Esquisse Fl. Trist., p. 26.

Tristan da Cunha. *Moseley; Thouars.*

Generally diffused in both north and south temperate and subtropical regions.

Cryptonemiaceæ.

Gymnogongrus capensis, J. G. Agardh.

Gymnogongrus capensis, J. G. Agardh, Sp. Alg., iii. p. 213; Dickie in Journ. Linn. Soc. Lond., xiv. p. 386.
Chondrus complicatus, Kütz., Tab. Phyc., xvii., t. 58.

Tristan da Cunha and Inaccessible Islands. *Moseley.*

Cape of Good Hope; Mauritius.

Callophyllis discigera, Kütz.

Callophyllis discigera, Kütz., Sp. Alg., p. 745; Dickie in Journ. Linn. Soc. Lond., xiv. p. 385.
Rhodomenia discigera, J. G. Agardh, Symb., i. p. 15.

Tristan da Cunha. *Moseley.*

Cape of Good Hope.

Gigartina radula, Esp.

Gigartina radula, Esp., Icon., t. 113; J. G. Agardh, Sp. Alg., iii. p. 202; Dickie in Journ. Linn. Soc. Lond., xiv. p. 386.

Tristan da Cunha and Inaccessible Island. *Moseley.*

The extreme south of America; Falkland Islands; Cape of Good Hope; Kerguelen Island.

Iridæa capensis, J. G. Agardh.

Iridæa capensis, J. G. Agardh, Sp. Alg., iii. p. 180; Dickie in Journ. Linn. Soc. Lond., xiv. p. 385.

Tristan da Cunha. *Moseley.*

Cape of Good Hope; Kerguelen Island.

Epymenia obtusa, Kütz.

Epymenia obtusa, Kütz., Sp. Alg., p. 787; Dickie in Journ. Linn. Soc. Lond., xiv. p. 385.

Tristan da Cunha. *Moseley.*

Marion Island; Aucklands; New Zealand; Cape Horn; Cape of Good Hope.

CERAMIACEÆ.

Microcladia moseleyi, Dickie.

Microcladia moseleyi, Dickie in Journ. Linn. Soc. Lond., xiv. p. 385.

Fronde sursum compressa, cæspitosa, parce dichotoma, apicibus obtusis incurvis; sphærosporis irregulariter dispositis.

TRISTAN DA CUNHA.—Endemic. *Moseley.*

"There are already four known species of this peculiar genus, viz.:—*Microcladia glandulosa*, found in South Britain, France, Spain, and the Mediterranean; *Microcladia coulteri*, Harv., from California; *Microcladia borealis*, Rupr., found at Nootka, Fort Vancouver, Unalaschka, and Golden Gate, California; and Kützing has described *Microcladia tenuis*, from the Gaboon, Guinea. This new species, which I have named after the discoverer, seems in general habit to be nearest to the British, but differs in being more simple in the form of the terminal ramuli and distribution of the tetraspores; the transverse section also shows a greater number of large cells surrounding the central tube."—*Dickie.*

Centroceras clavulatum, J. G. Agardh.

Centroceras clavulatum, J. G. Agardh, Sp. Alg., ii. p. 148; Dickie in Journ. Linn. Soc. Lond., xiv. p. 386.

TRISTAN DA CUNHA. *Moseley.*

Widely distributed in both hemispheres.

Centroceras oxyacanthum, Kütz.

Centroceras oxyacanthum, Kütz., Phyc. Gener., p. 742, et Sp. Alg., p. 689; Dickie in Journ. Linn. Soc. Lond., xiv. p. 386.

TRISTAN DA CUNHA and INACCESSIBLE ISLAND. *Moseley.*

West Indies; Cape of Good Hope.

CHLOROSPERMEÆ.

ULVACEÆ.

Porphyra laciniata, K. A. Agardh.

Porphyra laciniata, K. A. Agardh; Kütz., Sp. Alg., p. 692; Dickie in Journ. Linn. Soc. Lond., xiv. p. 386.

Ulva umbilicalis, Linn.; Thouars, Esquisse Fl. Trist., p. 25.

TRISTAN DA CUNHA. *Moseley; Thouars.*

Widely spread.

Porphyra vulgaris, K. A. Agardh.

Porphyra vulgaris, K. A. Agardh; Kütz., Sp. Alg., p. 692; Dickie in Journ. Linn. Soc. Lond., xiv. p. 386.

Tristan da Cunha. *Moseley.*

Widely spread.

Confervaceæ.

Cladophora hospita, Kütz.

Cladophora hospita, Kütz., Phyc. Gener., p. 271, et Sp. Alg., p. 388; Dickie in Journ. Linn. Soc. Lond., xiv. pp. 386 et 387.

Tristan da Cunha and Inaccessible Islands. *Moseley.*

South Africa, common; St Paul Island.

Thouars further enumerates *Conferva scoparia*, Linn. = *Sphacelaria scoparia*, Lyngb., and *Fucus palmatus*, Linn. = *Nitophyllum stipitatum*, Suhr. (*Sphærococcus palmatus*, Kütz.), making nine species altogether. He also states that he accidentally lost his main collection, which he believed to contain some undescribed species, when returning to the ship through a rough sea.

PRINCE EDWARD GROUP.

MARION ISLAND.

INTRODUCTORY NOTES.

For what is known of the natural history of this group, we are wholly indebted to the Challenger Expedition. The vegetation of these islands, the Crozets, Kerguelen, and Heard Islands, is essentially the same; therefore it would be superfluous to analyse the composition of their individual floras. Instead of this, a tabular view of the vascular plants of all the islands is given in the Report on the Botany of Heard Island—the last of the series (p. 244).[1] With the exception of *Hymenophyllum tunbridgense, β wilsoni*, and *Aspidium mohrioides* in Marion Island, and *Asplenium obtusatum* in the Crozets, all the vascular plants, at least, that have been collected in Marion, the Crozets, and Heard Islands, occur also in Kerguelen Island. In this place Mr Moseley's account of the vegetation, &c., of Marion Island, in his Notes by a Naturalist on the Challenger, pp. 163–170, is repeated with some trifling alterations to bring it in harmony with the other part of this work:—

"Marion Island, which with the smaller island of Prince Edward makes up the Prince Edward group, was sighted on the evening of December 25. The centre of Marion Island is in lat. 46° 52′ S., long. 37° 45′ E., that of Prince Edward Island in lat. 46° 36′ S., long. 37° 57′ E., the city of Lyons being in a nearly corresponding latitude in the northern hemisphere.

"The islands are distant from the Crozets (which lie to the north-east of them, and are the nearest land) 450 miles. From the African continent they are distant about 960 miles, the nearest point being about Cape Recife at Algoa Bay. From Kerguelen's Land Marion Island is distant about 1200 miles; from Lindsay and Bouvet Islands, about 1400 miles; from Tristan da Cunha and Gough Islands, about 2150 miles; and, lastly, from the Falkland Islands and Fuegia (to which, in common with all the other Antarctic islands hitherto examined, except the Campbell and Auckland group, they are in their flora most nearly related) they are distant about 4500 geographical miles.

"The islands lie, as do the Crozets and Kerguelen's Land, well within the course of the Antarctic

[1] Concerning the vegetation of Diego Alvariez or Gough Island, in about 40° 30′ S. lat., and 10° W. long., we know nothing beyond the statement published by Mr Moseley (Journ. Linn. Soc. Lond. xiv. p. 384), that he was informed by a Tristan settler, who had lived for months in the island, that the same flowering plants and tree (*Phylica*) grow there as in the Tristan da Cunha group, but that the ferns are different.

Of the botany of the group of islands in about 54° S. lat., and 5° W. long., comprising Bouvet, Lindsay, and Thompson, we have no knowledge whatever.

drift, which, fusing with the Cape Horn current, sweeps in an easterly direction across the Antarctic sea, and further within the broad belt of prevalent westerly winds. The combined action of the winds and the current has, no doubt, brought about in greater part the diffusion of the Fuegian and Falkland Island plants, to the islands lying eastward of them; but it is possible that the multitudes of sea-birds inhabiting the islands, and nesting, as they do, amongst the herbage, may have been of influence in the matter by transporting seeds attached to their feathers or feet. Most of the birds are of widely wandering habits.

"The island of Marion, the larger of the two forming the group, and on which alone of the two an opportunity of landing was afforded, is about eleven miles in length, eight in extreme breadth, and about eighty square miles in area. The highest point is about 4250 feet above the sea-level. The island is entirely volcanic, and presents the usual features of volcanic islands which are of considerable age. The highest land is in the centre; and irregular slopes lead down to the sea on all sides. These slopes are of very moderate inclination, and are broken in numerous places by shallow valleys bounded by cliffs where the more ancient flows of lava have suffered denudation. These valleys are occupied by more recent lava-flows, which still retain their rough pinnacled upper surface. Further, all over the slopes and summits of the island are scattered irregularly numerous small cones, formed mostly of conspicuously red scoriæ. The lava is basaltic, presenting in many places in the cliffs a columnar structure. Some sand gathered on the shores of a small freshwater lake near the sea was full of augite and olivine crystals.

"The island was sighted, together with Prince Edward Island, on December 25, but was not approached closely till the morning of December 26. The upper part of the island was covered with snow, commencing, as usual, on the slopes, as patches lying unmelted in sheltered hollows, succeeded by a general thin coating or powdering over, through which the black rock showed out in all directions, and above this, again, on the highest cones and peaks, forming a continuous sheet of glistening white. The summits were enveloped in clouds, which lifted or dispersed in a partial manner from time to time. Below the snow, and up amongst the patchy region, the slopes of the island were covered with a coating of green, which formed a contrast to the dark cliffs and red lower cones, which were almost destitute of verdure, and had very little snow upon them. Here and there large patches of yellow showed out amidst the green, and were conspicuous even at some distance from the shore. It was found that these patches were formed of mosses. The mosses, indeed, occurring thus in patches, some dark, some nearly white, and others yellow, form the principal features in the vegetation as seen from a distance, showing out, as they do, amongst the very uniform mixture of phanerogamic plants. The small rocky projections on the rough surfaces of the modern lava-flows, standing out dark above the verdure, have at a distance exactly the appearance of low bushes with dark foliage, and were at first believed to be such. The day was remarkably fine and sunshiny.

"The rocks, about high-tide mark, are covered with a dense growth of the large brown seaweed (*Durvillea utilis*), which is of great assistance in breaking the surf. Beyond the ordinary reach of the sea, but still within the beach-line, the rocks are covered with a crassulaceous plant (*Tillæa moschata*, DC.), occurring also in Kerguelen's Land. Succeeding the beach is a thick growth of herbage, investing a swampy, black, peaty soil, which covers the underlying rock more or less thickly everywhere on the lower ground, and extends up with the herbage almost to the snow. The principal plants forming the thick growth are *Acæna adscendens*, *Azorella selago*, and *Poa cookii*. The *Acæna* is by far the most abundant plant on the island.

"The *Azorella* forms low, convex, bright green patches in intervals between the *Acæna* or cake-like masses at its roots.

"*Azorella selago* is a characteristic plant of the Southern Islands, forming large convex masses often several feet in diameter, which are compact and firm, and when on solid ground, yield little to the tread. The masses are made up of the stems and shoots of the plants, closely packed together side by side, with their flowering tips and small, stiff, and tough leaves forming an even, rounded surface at the exterior, being all of the same length. The interior of the masses is full of dead leaves and stems. The whole, where growing in abundance, forms sheets and hummocks, which invest the soil sometimes for acres in extent at Kerguelen's Land with a continuous elastic green coating. An allied plant (*Bolax glebaria*) forms similar masses at the Falkland Islands, and there is a tendency in many Antarctic plants to assume a similar habit, as in the case, *e.g.*, of *Lyallia kerguelensis*.

"The *Poa* is abundant everywhere, mingled with the *Acæna* and *Azorella*. The plants are, no doubt, rendered especially luxuriant by the dung of the numerous sea-birds; but no mutual benefit arrangement has sprung up between the *Poa* and the penguins, as it has at the Tristan da Cunha group between the penguins and *Spartina arundinacea*.

"*Poa cookii* nowhere forms a tussock. The rookeries of king penguins are entirely bare, and the grass is not more luxuriant around the nests of the golden-crested penguins than elsewhere. The *Poa* was the only grass found in flower in the island. Different-looking forms were observed, especially around the numerous pools of water on the hill slopes; but they are possibly mere modifications of the same grass due to alteration of conditions. None of them were in flower. *Pringlea antiscorbutica*, the Kerguelen cabbage, is, at least in the part of the island explored, by no means so abundant as at Kerguelen's Land. It was some time before a plant was found; but subsequently a good many were met with, but not growing in groups of more than four or five plants. Some were found on the very verge of the shore, within reach of the spray, and the rest on the banks of a small rivulet. The cabbage was mostly in full flower and bud, with sepals and anthers complete. No plants were found with seeds at all ripe. The last year's seeds were decayed. This plant at least would appear to have a regular summer flowering-season, since Sir Joseph Hooker found only the fruit at Kerguelen's Land in the winter.

"Of the ferns, *Lomaria alpina* is the most conspicuous, forming thick and wide patches amongst the *Acæna* and *Poa*, and occurring abundantly everywhere. *Aspidium mohriodes* was found growing under sheltered banks beside the small stream, together with the other three ferns.

"*Hymenophyllum tunbridgense*, *β wilsoni*, a British species, and *Polypodium australe*, grow abundantly on the sheltered sides of the projecting rock-masses already mentioned, but are dwarfed and almost hidden amongst the mosses. They grow in greatest luxuriance on the damp banks of the stream.

"The mosses are in most striking abundance, and, in some very wet places, form continuous sheets over the ground many square yards in extent. Lichens are not in very great quantity, except the incrusting forms, which are tolerably abundant on the rocks.

"An attempt was made to reach the actual upper limit of vegetation, but failed from being commenced too late in the day. The ascent was up the bed of the small stream already mentioned, which lay at the verge of one of the modern lava-flows, where it abutted on a low cliff, exposing a more ancient flow in section. The more recent flow had a very gradual inclination of not more than 8°. The first scattered patches of snow were encountered at about an elevation of 800 feet. A patch of the cabbage was met with at 1000 feet.

"The highest point reached was at about 1500 feet elevation. Here *Ranunculus biternatus* had disappeared, and, where growing a little lower down, was very much dwarfed; and *Azorella*, with a few mosses, formed the principal vegetation, but the green was merely dotted over the bare rock and stones. Patches of snow were here frequent, and the *Azorella* appeared, from this point, to be continued on for about 300 feet more, becoming scantier and scantier. The absolute limit of vegetation may probably be placed at about 2000 feet, for the part explored was somewhat sheltered. A red cone of scoriæ more exposed was quite bare of green from about 1000 feet elevation upwards.

"At about 1400 feet elevation, the water in a shallow pool exposed to the sun was found to have a temperature of 65° F., the temperature of the air in the shade being 44°. At 900 feet, a similar pool, but one which had a small stream of colder water running into it from the cliff, had a temperature of 55°, the air here being at 45°. The thermometer here, when plunged into the midst of a rounded mass of *Azorella*, rose to 50°. It is evident that these mounds retain and store up a considerable quantity of the sun's heat; and this fact probably yields a partial explanation of their peculiar form, which is that of so many otherwise widely different Antarctic plants, and of some New Zealand Alpine plants (*Raoulia*, *Haastia*). No doubt, power gained of resistance to wind is one of the chief causes of assumption of this form.

"The island being of such considerable area, and so short a time having been available for the examination of its flora, no conclusions can be drawn from the absence of certain plants, such as *Lyallia*, which might have been expected to occur there, since they occur in Kerguelen's Land, associated with nearly all those found. Although the few plants on such islands as these are, as a rule, widely spread, yet some appear to be local and somewhat scarce; as, for example, the *Aspidium*, which was only found at the last moment under the banks of one of the streams. It is thus highly probable that several plants have been overlooked, and amongst them possibly *Lyallia*. The nine flowering plants collected in the island are all identical with species growing in Kerguelen's Land; and the same is the case with the Club-mosses. Of the ferns, two occur in Kerguelen's Land, which has also two others not occurring here. Fifteen vascular plants in all were found in the island of Marion.

"Mr Darwin suggests that Kerguelen's Land has been mainly stocked by seeds brought with ice and stones on icebergs.[1] The occurrence of *Pringlea* on Marion Island, as also on the Crozets and Kerguelen's Land, probably points, however, to an ancient land-connection between these islands, which the antiquity and extent of denudation of the lavas would seem to bear out. It is difficult to see how such seeds as those of *Pringlea* could have been transported from one island to another by birds; and these seeds seem to be remarkably perishable;[2] besides, the distinctness of the genus points to a former wide extent of land on which its progenitors became developed. The existence of fossil tree-trunks in Kerguelen's Land points to similar conditions. Sir J. D. Hooker, in the Flora Antarctica, p. 220, expressed the above conclusion after his voyage with Captain Ross, thirty-five years ago, and with singular foresight suggested that there has taken place 'the destruction of a large body of land, of which St Paul and Amsterdam Islands may be the only remains; or the subsidence of a chain of mountains running east and west, of which Prince Edward Island, Marion, and the Crozets are the exposed peaks.' This view is directly confirmed by the discovery by the 'Challenger's' soundings of the Kerguelen plateau, which 'rises in many parts to within 1500 fathoms of

[1] Origin of Species, ed. vi. p. 354.

[2] Seeds sent to Kew by Mr Moseley germinated.

the sea surface, and forms the common foundation of all the islands situated in this part of the world, viz., Prince Edward's Islands, the Crozet Islands, the Kerguelen Group, the Heard Islands, and the islands of St Paul and Amsterdam,' 'as proved by the soundings of both the "Challenger" and the "Gazelle."' The occurrence with the cabbage on Heard Island of the helpless wingless fly,[1] seems a further proof that the plant was not conveyed to the various islands by birds. It is hardly possible that both could have been transported, and the fly could probably not exist without the cabbage. The existence of the same species of freshwater fish in New Zealand, Tasmania, the Falkland Islands, and South America, points also to the former existence of more intervening land between these points."

To the foregoing we have nothing to add beyond the remarks under each species in the ensuing list.

[1] *Calycopteryx moseleyi*, Eaton, Verrall in Phil. Trans. Roy. Soc. Lond., clxviii. p. 239, t. 14, fig. 1 a–e.

ENUMERATION OF THE PLANTS.

PHANEROGAMÆ.

RANUNCULACEÆ.

Ranunculus biternatus, Sm.

Ranunculus biternatus, Sm. in Rees' Cycl. ; DC., Prodr., i. p. 30 ; Deless., Ic. Pl., i. t. 24 ; Hook., Ic. Pl., t. 497 ; Hook. f., Fl. Antarct., p. 224, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 17 (sub. *Ranunculo crassipedi*).

Ranunculus exiguus, D'Urv. in Mém. Soc. Linn. Par., iv. p. 615.

Ranunculus flaccidus, Banks et Sol. MSS. ex Hook. f., Fl. Antarct., ii. p. 224.

Marion Island. *Moseley.*

Fuegia ; Falklands ; Tristan da Cunha ? Kerguelen ; Amsterdam Island.

In the Botany of Kerguelen Island,[1] Sir Joseph Hooker points out the close affinity of his *Ranunculus crassipes* with the South American *Ranunculus biternatus*, and regards it as a derivative form of this plant, stating that it differs chiefly in its robustness and simple leaves. The Marion Island plant is quite the same as the American, and only a portion of the Kerguelen specimens belongs to the form originally described and figured as *Ranunculus crassipes*. The leaves of some of the Kerguelen Island specimens are as much divided as those of some of the American specimens, while others are intermediate between these and typical *Ranunculus crassipes*.

CRUCIFERÆ.

Pringlea antiscorbutica, R. Br.

Pringlea antiscorbutica, R. Br. in Hook. f. Fl. Antarct., p. 239, t. 90 et 91 ; Oliver in Journ. Linn. Soc. Lond., xiv. p. 389 ; Kidder in Bull. U.S. Nat. Mus., iii. p. 21 ; Dyer in Proc. Linn. Soc. Lond., 1874, p. 34 ; Hook. f. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 18.

Marion Island. *Moseley.*

This remarkably distinct and valuable vegetable is restricted to the islands of the South Indian Ocean, where it is one of the commonest plants. It occurs in the Crozets, Kerguelen, and Heard Islands, but it is absent from the Tristan da Cunha group, and Amsterdam and St Paul Islands, which are not in so high a latitude by ten to fifteen

[1] *Philosophical Transactions of the Royal Society of London*, clxviii. p. 17.

degrees, and enjoy a relatively warmer climate, though by no means a warm one. In Kerguelen Island it is very abundant. The specimens brought from Marion Island by Mr Moseley are dwarf—five to seven inches high; and the seed-vessels are only very slightly hairy, and about a third of an inch long.

Pringlea antiscorbutica is the only species of the genus, which is a very distinct one in habit, though closely allied in structure to the northern *Cochlearia*.

[The *Cerastium* mentioned by Mr Moseley (Journ. Linn. Soc. Lond., xiv. p. 387) does not appear to have been dried, probably because it was regarded as a certainly introduced plant.]

PORTULACEÆ.

Montia fontana, Linn.

Montia fontana, Linn., Sp. Pl., ed. 1. p. 87; Hook. f., Fl. Antarct., p. 278, et Handb. Fl. N. Zeal., p. 27.

Marion Island. *Moseley.*

Generally diffused in both the north and south temperate regions, including the Bermudas, Kerguelen Island, and other remote islets.

ROSACEÆ.

Acæna adscendens, Vahl.

Acæna adscendens, Vahl, Enum. Pl., i. p. 297; Hook. f., Fl. Antarct., p. 10, et p. 268, t. 96; Handb. Fl. N. Zeal., p. 56; Oliver in Journ. Linn. Soc. Lond., xiv. p. 389.

Acæna affinis, Hook. f., Fl. Antarct., p. 268, t. 96, B., et in Phil. Trans. Roy. Soc. Lond., clxviii., p. 20; Moseley in Journ. Linn. Soc. Lond., xiv. p. 387.

Marion Island. *Moseley.*

As here limited, this species inhabits the Crozets, Kerguelen Island, New Zealand, Macquarie Island, Fuegia, and the Falklands.

The flowers appear to be functionally unisexual, and to exhibit differences in the relative length of the stamens and other parts. The characters upon which *Acæna affinis* was founded depending upon mere sexual differences, Professor Oliver reduced the species.

Most of the New Zealand specimens are altogether smaller, and have smaller leaves than those from the islands of the South Indian Ocean and from America, but the Macquarie Island plant is equally robust.

CRASSULACEÆ.

Tillæa moschata, DC.

Tillæa moschata, DC., Prodr., iii. p. 382; Hook. f., Handb. Fl. N. Zeal., p. 61; Phil. Trans Roy. Soc. Lond., clxviii. p. 20; Hook., Ic. Pl., t. 535.
Bulliarda moschata, D'Urv. in Mém. Soc. Linn. Par., iv. p. 618; Hook. f., Fl. Antarct., p 15 et p. 278.
Crassula moschata, Forst., Comm. Gœtt., ix. p. 26 (reprint, p. 16).
Bulliarda magellanica, DC., Bull. Philom., n. 49.

Marion Island. *Moseley.*

Diffused all round the south temperate zone, including the Crozets and Kerguelen Island.

HALORAGEÆ.

Callitriche verna, Linn., subsp. *obtusangula.*

Callitriche verna, Linn., subsp. *obtusangula*, Hook. f. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 20.
Callitriche verna, Linn., Sp. Pl., ed. 2, p. 6; Hook. f., Fl. Antarct., p. 272; Handb. Fl. N. Zeal., p. 68.
Callitriche obtusangula, Le Gall.; Hegelm., Monogr. Callit., p. 54 (species); Hook. f. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 20.
Callitriche antarctica, Engelm.; Kidder in Bull. U.S. Nat. Mus., iii. p. 23, ex Hook. f., l. c.; Oliver in Journ. Linn. Soc. Lond. xiv. p. 380.

Marion Island. *Moseley.*

This form occurs in many of the southern islets, as the Crozets, Kerguelen, Heard, and Campbell Islands, as well as in Polynesia. We have only seen European localities recorded for it in the northern hemisphere. *Callitriche verna* in a broad sense is generally diffused in temperate regions.

UMBELLIFERÆ.

Azorella selago, Hook. f.

Azorella selago, Hook. f., Fl. Antarct., p. 284, t. 99; et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 20.

Marion Island. *Moseley.*

This species occurs in Fuegia, the Falklands, the Crozets, Kerguelen, Heard, and Macquarie Islands — a noteworthy area of distribution, especially in relation to its existence in the last-named island, and its absence from the Tristan da Cunha group.

The genus *Azorella*, even in the extended sense of Bentham and Hooker's Genera Plantarum, and in Bentham's Flora Australiensis, is confined to the south temperate zone and Andine America; but the section to which *Azorella selago* belongs, which is characterised by the dense cushion-like habit of growth of its species, is peculiar to America and the islands and islets as far eastward as Macquarie Island. The New Zealand, and especially the Australian species, are very different in habit, yet their carpological characters are much the same.

GRAMINEÆ.

Poa cookii, Hook. f.

Poa cookii, Hook. f. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 22.
Festuca cookii, Hook. f., Fl. Antarct., p. 382, t. 139.

MARION ISLAND. *Moseley.*

Kerguelen and Heard Islands.

This was the only grass found on the island in flower, but Mr Moseley brought home foliage of another, which is sweet-scented in the dried state.

[*Agrostis magellanica* (*Agrostis antarctica*) is by mistake recorded from Marion Island in the Botany of Kerguelen Island (Phil. Trans. Roy. Soc. Lond., clxviii. p. 21).]

CRYPTOGAMÆ.

FILICES.

Hymenophyllum tunbridgense, Smith, *β wilsoni*, Hook.

Hymenophyllum tunbridgense, Smith, *β wilsoni*, Hook. and Bak., Synop. Fil., p. 67.
Hymenophyllum wilsoni, Hook., Sp. Fil., i. p. 95 (species); Moseley in Journ. Linn. Soc. Lond., xiv. p. 387.
Hymenophyllum asperulum, Kunze, Pl. Crypt. Poepp., p. 109.

MARION ISLAND. *Moseley.*

As limited in the Synopsis Filicum, this species is very widely diffused in both the northern and the southern hemispheres. The form from Marion Island is very dwarf, the tallest fronds being only about three-quarters of an inch high, with oblong, obtuse, sparsely denticulate lobes, and entire involucres.

Lomaria alpina, Spreng.

Lomaria alpina, Spreng.; Hook., Fil. Exot., t. 32; Hook. and Bak., Synop. Fil., p. 178; Moseley in Journ. Linn. Soc. Lond., xiv. p. 387.
Lomaria penna-marina, Mett. in Kuhn Fil. Afr., p. 92.

MARION ISLAND. *Moseley.*

Generally diffused all round the south temperate zone.

Aspidium (Polystichum) mohrioides, Bory.

Aspidium (*Polystichum*) *mohrioides*, Bory in Duperr. Voy. "Coquille," Bot. Crypt., p. 267, t. 35; Hook., Sp. Fil., iv. p. 26; Hook. and Bak., Synop. Fil., p. 252; Hook. f., Fl. Antarct., p. 392, t. 149.

MARION ISLAND. *Moseley.*

Previously to 1873 this fern, which is easily distinguished from its nearest allies, was only known from the extreme south of America, the Falkland Islands, and one or two places in the mountains of Chili; but in 1879 it was discovered in the mountains of Northern California, at an altitude of 7500 to 8000 feet, and De l'Isle collected it in Amsterdam Island the year after (1874) Moseley found it in Marion.

Polypodium (Grammitis) australe, Mett.

Polypodium (Grammitis) australe, Mett., Polypod., p. 36; Hook. and Bak., Synop. Fil., p. 322.

MARION ISLAND. *Moseley.*

Widely spread in the south temperate zone, including the Tristan da Cunha group and Amsterdam Island.

Mr Moseley's Marion Island specimens of the plant are dense tufts, bearing fronds from a quarter to three quarters of an inch long.

[*Polypodium vulgare* is recorded from Marion Island in the Botany of Kerguelen Island (Phil. Trans. Roy. Soc. Lond., clxviii. pp. 16 and 23), but no specimen can be found, and it is probably an error, arising from a confusion of the lists.]

LYCOPODIACEÆ.

Lycopodium clavatum, Linn., var. *magellanicum*, Hook. f.

Lycopodium clavatum, Linn., var. *magellanicum*, Hook. f., Fl. Antarct. p. 113; Swartz, Synop. Fil., p. 180 (species); Spring, Monogr. Lycopod., partie i., p. 96, et partie ii., p. 46.

MARION ISLAND. *Moseley.*

All round the temperate zone of the southern hemisphere; and the typical form is as widely dispersed in northern countries having a cold damp climate.

Lycopodium saururus, Lam.

Lycopodium saururus, Lam.; Spring, Monogr. Lycopod., partie i., p. 21, et partie ii., p. 6.
Lycopodium selago, Linn., var. *saururus*, Hook. f., Fl. Antarct., p. 394, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 23.

MARION ISLAND. *Moseley.*

South Africa and the mountains of Western Tropical Africa, South America, and in most of the islets from Ascension to Kerguelen. Typical *Lycopodium selago*, Linn., is almost universal in damp, cold regions. We have been guided by Mr J. G. Baker in retaining specific rank for *Lycopodium saururus*.

MUSCI.[1]

Cynodontium australe, Mitt.

Cynodontium australe, Mitt. in Journ. Linn. Soc. Lond., xii. p. 42 et xv. p. 70.

MARION ISLAND.—Fruit past maturity—*Moseley.*

Dicranum (Isocarpus) antarcticum, Mitt.

Dicranum (*Isocarpus*) *antarcticum*, Mitt. in Journ. Linn. Soc. Lond., xii. p. 63, et xv. p. 70.

MARION ISLAND.—A few stems with unripe fruit appear to belong to this species; they were growing in a tuft of *Jungermannia colorata.*—*Moseley.*

Campylopus introflexus, Mitt.

Campylopus introflexus, Mitt. in Journ. Linn. Soc. Lond., xii. p. 84, et xv. p. 70.

MARION ISLAND.—Barren—*Moseley.*

Campylopus cavifolius, Mitt.

Camplyopus cavifolius, Mitt. in Journ. Linn. Soc. Lond., xii. p. 87, et xv. p. 70.

MARION ISLAND.—Also without fruit in dense tufts—*Moseley.*

Grimmia (Dryptodon) chlorocarpa, Mitt.

Grimmia (*Dryptodon*) *chlorocarpa*, Mitt. in Journ. Linn. Soc. Lond., xv. p. 70 (*nomen tantum*).
Racomitrium crispulum, Hook. f. et Wils., Fl. N. Zeal., ii. p. 75.

MARION ISLAND.—Without fructification—*Moseley.*

Grimmia (Racomitrium) lanuginosa, Mitt.

Grimmia (*Racomitrium*) *lanuginosa*, Mitt. in Journ. Linn. Soc. Lond., xii. p. 104, et xv. p. 70.

MARION ISLAND.—Tall stems, without fruit—*Moseley.*

Apalodium australe, Mitt.

Apalodium australe, Mitt. in Journ. Linn. Soc. Lond., xii. p. 239, et xv. p. 70.
Orthodontium australe, Hook. f. et Wils., Fl. Antarct., p. 412, t. 153, fig. 5.

MARION ISLAND.—With fruit not quite mature—*Moseley.*

The group of mosses of which *Apalodium australe* is a fairly representative species, has had all its species described as belonging to *Orthodontium*, but the original *Orthodontium*

[1] Extracted from the *Journal of the Linnean Society of London*, with additional notes, by W. Mitten.

gracile is always supposed to be nearly allied to *Bryum*, to which genus no species of *Apalodium* seems to have either affinity or resemblance. This species is represented in the Flora Antarctica as having the processes of the internal peristome arising from a considerable membranous base which cannot be found in the specimens. The inflorescence is synœcious. The *Apalodium pellucens* (Hook., Ic. Plant., t. 34), from the Andes, has its male flowers at the apices of short branches, and the normal position of its capsules is probably erect. From this, Hampe thought *Apalodium longisetum* (Linnæa, 1863, p. 129), different, and proposed *Apalodium confine*, also from the Andes of New Granada, but they, with the original *Apalodium pellucens* gathered by Jameson, seem so similar, that they might have been gathered in the same tuft of moss: these, with the dicœcious *Apalodium tenue*, C. Müll. (Syn., i. p. 240), from Chili, are the known species of the South American continent. *Apalodium lineare*, Schwægr., t. 188 (*Orthodontium*), from South Africa, is described and figured with the peristome internal and external equal in length. In *Apalodium infractum*, Dozy et Molkenb. (Musc. Archip. Ind., ii. t. 14,) the peristome is figured with the internal processes twice the length of the teeth, and without any membrane at their base, and such is the case in Horsfield's specimens from Java. From the Blue Mountains, New South Wales, gathered by the Rev. R. Collie, Baron von Mueller sends another species, *Apalodium inflatum*, Mitt.[1]

Entosthodon laxus, Mitt.

Entosthodon laxus, Mitt. in Journ. Linn. Soc. Lond., xv. p. 70.
Physcomitrium laxum, Hook. f. et Wils., Fl. Antarct., p. 399, t. 151, fig. 5.

Marion Island.—A single stem, with young fruit and two or three barren plants—*Moseley*.

Bartramia (Philonotis) tenuis, Tayl.

Bartramia (*Philonotis*) *tenuis*, Tayl.; Hook. f., Handb. Fl. N. Zeal., p. 448; Mitt. in Journ. Linn. Soc. Lond., xv. p. 70.

Marion Island.—Without fruit—*Moseley*.

Bartramia (Philonotis) remotifolia, Hook. f. et Wils.

Bartramia (*Philonotis*) *remotifolia*, Hook. f. et Wils., Fl. Tasm., ii. p. 193, t. 174, fig. 3; Mitt. in Journ. Linn. Soc. Lond., xv. p. 70.

Marion Island.—In extensive patches with perfect fruit—*Moseley*.

[1] Monoicum. Folia erecto-patentia, linearia, integerrima, theca in pedunculo brevi urceolata, evacua inflata; peristomii simplicis externi dentibus brevibus.—Caules in cæspitem latum congesti 2 mm. alti. Folia subnitida, longitud. 4 mm. attingentia. Pedunculus 3 mm. longus. Theca erecta, breviter ovalis, evacua sub ore parvo contracto urceolata.

Bartramia (Glyphocarpus) marionensis, Mitt.

Bartramia (Glyphocarpus) marionensis, Mitt., n. sp.
Bartramia quadrata, Mitt. in Journ. Linn. Soc. Lond., xv. p. 70, non Hook.

Habitus staturaque *Bartramiæ quadratæ* foliorum areolatione autem e cellulis brevioribus latioribusque, sicca et humida rigida, nitida.

Marion Island. *Moseley.*

This small species, with plumose foliage, closely resembles *Bartramia quadrata*, but on a close comparison it is found to have its leaf-cells wider, and only half as long; they are, in fact, two or three times longer than wide, whilst in *Bartramia quadrata* they are six times longer than wide. *Bartramia quadrata* and *Bartramia capensis* formed the genus *Glyphocarpus* of Brown; they differ from the *Bartramidula* of Schimper in their stiff foliage, but too little is known of these species to form an opinion of their affinities; they seem to show some approximation to *Breutelia* rather than to *Philonotis*.

Bartramia (Breutelia) dumosa, Mitt.

Bartramia (Breutelia) dumosa, Mitt. in Journ. Linn. Soc. Lond., xii. p. 267, et xv., p. 70.

Marion Island.—Sterile—*Moseley.*

The original specimens of this species, collected by Sir J. D. Hooker in Hermite Island, have the seta about half an inch long, and in this agree exactly with those from Marion Island, and differ from the *Bartramia chilensis*, Lorentz, which has a seta from one to one and a half inches long—a small difference, but it enables them to be distinguished at sight. This was overlooked at the time the Flora Antarctica was published.

Bryum pendulum, Hornsch.

Bryum pendulum, Hornsch.; Jäger, Gen. et Sp. Musc., i. p. 145; Mitt. in Journ. Linn. Soc. Lond., xv. p. 70.

Marion Island.—Without fruit—*Moseley.*

Bryum lævigatum, Hook. f. et Wils.

Bryum lævigatum, Hook. f. et Wils., Fl. Antarct., p. 415, t. 154, fig. 3; Mitt. in Journ. Linn. Soc. Lond., xv. p. 70.

Marion Island.—Also sterile, but in fine state—*Moseley.*

Mielichhoferia tenuiseta, Mitt.

Mielichhoferia tenuiseta, Mitt. in Journ. Linn. Soc. Lond., xv. p. 70 (*nomen tantum*).

Marion Island.—In luxuriant growth, with immature fruit—*Moseley.*

Distichophyllum fasciculatum, Mitt. (Pl. LIII.)

Distichophyllum fasciculatum, Mitt. in Journ. Linn. Soc. Lond., xv. p. 71.

Monoicum. Caulis debilis, erectus, fasciculatim ramosus, ruber. Folia compressa, caulina omnia conformia, lateralia patentia, oblongo-ovalia, obtusa, apiculo brevissimo sæpius obsoleto terminata, planiuscula, nervo tenui ultra medium evanido, triplici serie cellularum angustissimarum marginata, integerrima, cellulis hexagonis limpidis areolata; perichætialia erecta, interna late ovalia, convoluta, apice acuta, subserrulata, immarginata, enervia. Theca in pedunculo elongato rubro lævi erecta, ovalis, collo sensim angustato.

Caulis uncialis biuncialisve cum foliis lineam latus. Folia pallide stramineo-fusca, sicca vix compressa marginibus flexuosis. Pedunculus unciam brevior.

Like *Distichophyllum sinuosum*, but with cells twice as large and an erect capsule.

Marion Island.—Growing in a tufted manner intermixed with *Jungermannia colorata—Moseley.*

This species agrees very nearly with *Distichophyllum amblyophyllum*, Mitt. (*Hookeria*, Hook. f. et Wils.), from New Zealand, but differs in the presence of a minute apiculus to its leaves, which have also a shorter nerve, and its capsule is nearly erect and not pendulous. It resembles also *Distichophyllum sinuosum* (*Hookeria*, Hook. f. et Wils.) from Tasmania. *Distichophyllum krausii* (Lorentz, *Mniadelphus*) from Chili, has a longer nerve and no apiculus; all these species are very similar in size and in the colour of their foliage, and with *Distichophyllum microcarpum* (*Hookeria*, Hook. f. et Wils.) of New Zealand, form a small group of species agreeing in the rounded apices of their leaves, and in having their capsules supported on a smooth fruit-stalk.

Distichophyllum imbricatum, Mitt. (Pl. LIII.)

Distichophyllum imbricatum, Mitt. in Journ. Linn. Soc. Lond., xv. p. 71.

Caulis rubro-fuscus, fasciculatim ramosus, erectus. Folia concava, fere teretiuscule imbricata, ad ramorum apices in gemmam subacutam congesta, ovali-oblonga, acuta, apiculo parvo terminata, duplice serie cellularum angustissimarum marginata, nervo angusto ultra medium evanescente, cellulis limpidis hexagonis areolata.

Caulis semiuncialis cum foliis vix compressis lineam latus.

Similar to *Distichophyllum flaccidum*, but with acute leaves which at the apices of the stems are imbricated in a cuspidate manner.

Marion Island.—In a scattered manner amongst *Gottschea carnosa—Moseley.*

In the specimens of this moss the stems have leaves imbricated equally on all sides, but they are too scanty to show whether this be a constant character. The outline of the leaves is nearly that of *Distichophyllum zollingeri*, Bry. Jav., and of *Distichophyllum adnatum*, Mitt. (Fl. N. Zeal., t. 93, 94); they are of a dull brownish green, with their cells very iridescent.

Plagiothecium antarcticum, Mitt.

Plagiothecium antarcticum, Mitt. in Journ. Linn. Soc. Lond., xv. p. 71.

Monoicum, cæspitosum, ramis ascendentibus. Folia compressa, subfalcata, nitida, caulina ovata, acuminata, integerrima, enervia, ramea ovato-lanceolata, tenuiter acuminata, subenervia, omnia basi subcordata, cellulis angustis elongatis areolata; perichætialia convoluta, late ovata, breviter acuminata. Theca in pedunculo elongato rubro, ovalis, inæqualis suberecta inclinatave, operculo breviter conico, peristomii interni ciliis in unum coalitis, inter processos carinatos dentium longitudinis impositis in membranam usque ad dimidiam dentium longitudinem insidentibus.

Habitus adspectusque omnino *Plagiothecii pulchelli*, foliis autem basi ad insertionem subcordatim dilatatis.

Marion Island. *Moseley.*

Stereodon cupressiformis, Linn. (*Hypnum*).

Stereodon cupressiformis, Linn. (*Hypnum*); Mitt. in Journ. Linn. Soc. Lond., xv. p. 71.

Marion Island.—A few barren stems—*Moseley.*

Acrocladium politum, Mitt.

Acrocladium politum, Hook. f. et Wils., Fl. Antarct., p. 416, t. 154, fig. 2 (*Hypnum*); Mitt. in Journ. Linn. Soc. Lond., xv. p. 71.

Marion Island.—Small fragments attached to the lower parts of *Grimmia lanuginosa* —*Moseley.*

Amblystegium decussatum, Mitt.

Amblystegium decussatum, Hook. f. et Wils., Fl. N. Zeal., ii. t. 90, fig. 2 (*Hypnum*); Mitt. in Journ. Linn. Soc. Lond., xv. p. 72.

Marion Island.—A slender state, unlike the larger New Zealand forms; but the substance of the leaves is not different—*Moseley.*

Hypnum (Brachythecium) subpilosum, Hook. f. et Wils.

Hypnum (*Brachythecium*) *subpilosum*, Hook. f. et Wils., Fl. Antarct., p. 418, t. 154; Mitt. in Journ. Linn. Soc. Lond., xv. p. 72.

Marion Island.—Without fruit—*Moseley.*

Eustichia longirostris, Mitt.

Eustichia longirostris, Mitt. in Journ. Linn. Soc. Lond., xii. p. 603, et xv. p. 72.

Marion Island.—Barren—*Moseley.*

Psilopilum australe, Mitt.

Psilopilum australe, Hook. f. et Wils., Fl. N. Zeal., ii. t. 87, fig. 6 (*Polytrichum*); Mitt. in Journ. Linn. Soc. Lond., xv. p. 72.

Marion Island.—Male plants only—*Moseley.*

HEPATICÆ.[1]

Jungermannia colorata, Lehm. et Lindenb.

Jungermannia colorata, Lehm. et Lindenb.; Mitt. in Journ. Linn. Soc. Lond., xv. p. 72.

MARION ISLAND.—In large tufts, with perfect fruit—*Moseley.*

Plagiochila heterodonta, Hook. f. et Tayl.

Plagiochila heterodonta, Hook. f. et Tayl. in Hook. Lond. Journ. Bot., 1844, p. 460 (*Jungermannia,* § *Plagiochila*).

Plagiochila marionensis, Mitt. in Journ. Linn. Soc. Lond., xv. p. 72.

MARION ISLAND. *Moseley.*

Tall specimens, the stems being from 5 to 7 cm. in length, with the leaves appressed and imbricated, as in *Plagiochila retrospectans.* Thus they have a very different look from those originally collected in Kerguelen. The perianths on these larger stems are compressed, oval, the mouth small, its lips crenate, and there is no dorsal wing.

Lophocolea pallidovirens, Hook. f. et Tayl.

Lophocolea pallidovirens, Hook. f. et Tayl., Fl. Antarct., p. 439, t. 159 (*Jungermannia*); Mitt. in Journ. Linn. Soc. Lond., xv. p. 72.

MARION ISLAND.—In small quantity, amongst mosses—*Moseley.*

Lophocolea novæ-zealandiæ, Nees.

Lophocolea novæ-zealandiæ, Nees; Mitt. in Journ. Linn. Soc. Lond., xv. p. 72.

MARION ISLAND.—Without fruit—*Moseley.*

Gottschea carnosa, Mitt. (Plate LIII.)

Gottschea carnosa, Mitt. in Journ. Linn. Soc. Lond., xv. p. 72.

Caulis ascendens, crassus, pallidus, carnosus. Folia patentia, laxe imbricata, lobo ventrali obovato obtuso, dorsali dimidiato obovato usque fere ad apicem lobi ventralis producto, basi cum lobo opposito imbricato caulem tegente, margine alæformi lobi ventralis infra medium lineæ conjunctionis desinente, ubique integerrima, carnosula, lævia. Amphigastria lunulata, cauli appressa.

Caulis uncialis biuncialisque, simplex furcatusve, sesquilineam crassus, cum foliis lineas tres latus, latere ventrali radicellis brevibus fuscis. Folia pallide ceraceo-viridia, seniora pallide fusca.

Near *Gottschea pachyphylla,* but different in the rounded apices of its leaves.

MARION ISLAND. *Moseley.*

[1] Extracted from the Journ. Lind. Soc. Lond., xv. pp. 72, 73, 1876, with additional notes by W. Mitten.

Lepidozia lævifolia, Hook. f. et Tayl.

Lepidozia lævifolia, Hook. f. et Tayl.; Mitt. in Journ. Linn. Soc. Lond., xv. p. 73.

MARION ISLAND.—Small barren stems, with the *Gottschea*, and among mosses—*Moseley*.

LICHENES.

Stereocaulon ?

Stereocaulon ?

MARION ISLAND.—On the ground; a mere fragment, and indeterminable—*Moseley*.

Cladonia fimbriata, Hoffm., forma *costata*.

Cladonia fimbriata, Hoffm., forma *costata*, Flœrke Clad. Comm., p. 66; Crombie in Journ. Linn. Soc. Lond., xvi. p. 222.

MARION ISLAND.—On the ground; very sparingly fertile—*Moseley*.

In all temperate regions.

Neuropogon melaxanthus, Nyl.

Neuropogon melaxanthus, Nyl., Synop. Lich., i. p. 272; Crombie in Journ. Linn. Soc. Lond., xvi. p. 222.

Usnea melaxantha, Achar., Meth. Lich., p. 307.

MARION ISLAND.—On rocks; sterile—*Moseley*.

All round the Arctic zone, except in Scandinavia; South America; Falklands; Kerguelen Island; New Zealand; Tasmania.

Peltigera polydactyla, Hoffm., forma *hymenina*, Nyl.

Peltigera polydactyla, Hoffm.; Nyl., Synop. Lich., i. p. 326; forma *hymenina*, Nyl., Lich. Scand., p. 90; Crombie in Journ. Linn. Soc. Lond., xvi. p. 222.

MARION ISLAND.—Amongst mosses on the ground; fertile—*Moseley*.

Europe and North America, and recorded from various other countries, though not clearly identified.

Cœnogonium confervoides, Nyl.

Cœnogonium confervoides, Nyl., Enum. Gen., p. 119; Crombie in Journ. Linn. Soc. Lond., xvi. p. 222.

MARION ISLAND.—Amongst mosses on the ground; fertile—*Moseley*.

FUNGI.

Agaricus (Naucoria) glebarum, Berkl.

Agaricus (Naucoria) glebarum, Berkl. in Hook. f. Fl. Antarct., ii. p. 447, t. 162, fig. 3, et Journ. Linn. Soc. Lond., xv. p. 52.

Marion Island.—On *Azorella—Moseley.*

Spores 0·0003 inch long.

Also in the Falkland Islands and Kerguelen Island.

Agaricus (Psilocybe) atro-rufus, Schæff.

Agaricus (Psilocybe) atro-rufus, Schæff., Ic. Fung. Bav., t. 234; Fries, Hymen. Europ., p. 300; Berkl. in Journ. Linn. Soc. Lond., xv. p. 53.

Marion Island. *Moseley.*

Spores lemon-shaped; 0·00028 inch long.

Europe; North America; Cape of Good Hope; Kerguelen Island.

ALGÆ.[1]

MELANOSPERMEÆ.

Sporochnaceæ.

Desmarestia viridis, Lamour.

Desmarestia viridis, Lamour in Ann. Mus. Par., xx. p. 43; Kütz., Sp. Alg., p. 570; Dickie in Journ. Linn. Soc. Lond., xv. p. 42.
Dichloria viridis, Grev., Alg. Brit., p. 39, t. 6.

Marion Island. *Moseley.*

Widely spread in both hemispheres, especially in the temperate zones.

Laminariaceæ.

Macrocystis pyrifera, K. A. Agardh.

Macrocystis pyrifera, K. A. Agardh, Sp. Alg., i. p. 47; Dickie in Journ. Linn. Soc. Lond., xv. p. 42.

Marion Island. *Moseley.*

Widely spread in the Southern and Pacific Oceans.

[1] This small collection was made by Mr Moseley; the marine species mostly off Marion Island, in forty fathoms of water.

RHODOSPERMEÆ.

RHODOMELACEÆ.

Dasya berkeleyi, J. G. Agardh.

Dasya berkeleyi, J. G. Agardh, Sp. Alg., ii. p. 1179; Hook. f., Handb. Fl. N. Zeal., p. 673; Dickie in Journ. Linn. Soc. Lond., xv. p. 42.

Polysiphonia berkeleyi, Hook. et Harv., Crypt. Antarct., p. 174; Harv., Nereis Austr., p. 46; Kütz., Sp. Alg., p. 817.

MARION ISLAND. *Moseley.*

Kerguelen Island; Aucklands; New Zealand; Patagonia; Falklands.

LAURENCIACEÆ.

Cladhymenia pellucida, Dickie.

Cladhymenia pellucida, Dickie in Journ. Linn. Soc. Lond., xv. p. 42.

Fronde lineari, tenui, membranacea, pluries pinnata, costa pellucida apicem versus obsoleta percursa; pinnis pinnulisque alternis, pinnulis serrato-dentatis.

The specimens are destitute of fructification; but on some there are wart-like bodies like those of *Cladhymenia conferta*, figured in the Nereis Australis.

SPHÆROCOCCOIDEÆ.

Delesseria lyallii, Hook. f.

Delesseria lyallii, Hook. f. et Harv., Alg. Tasm., p. 7; Dickie in Journ. Linn. Soc. Lond., xv. p. 43; Hook. f., Fl. Antarct., ii. p. 176.

Hypoglossum lyallii, Kütz., Sp. Alg., p. 876.

MARION ISLAND. *Moseley.*

Kerguelen Island; Tasmania; Patagonia; Falklands.

CRYPTONEMIACEÆ.

Callophyllis dichotoma, Kütz.

Callophyllis dichotoma, Kütz., Sp. Alg., p. 746; Dickie in Journ. Linn. Soc. Lond., xv. p. 43.

Rhodymenia dichotoma, Hook. f. et Harv. in Hook. f. Fl. Antarct., i. p. 186, t. 72, fig. 1; Hook. f., Handb. Fl. N. Zeal., p. 693.

MARION ISLAND. *Moseley.*

New Zealand; Campbell Island.

Epymenia obtusa, Kütz.

Epymenia obtusa, Kütz., Sp. Alg., p. 787; Dickie in Journ. Linn. Soc. Lond., xv. p. 43.

MARION ISLAND. *Moseley.*

New Zealand; Cape Horn, Cape of Good Hope.

Ceramiaceæ.

Ballia callitricha, Mont.

Ballia callitricha, Mont. Syll. Gen. et Sp. Crypt., p. 444; Kütz., Sp. Alg., p. 663; Dickie in Journ. Linn. Soc. Lond., xv. p. 43.
Sphacelaria callitricha, K. A. Agardh, Sp. Alg., ii. p. 23.

Marion Island. *Moseley.*

All round the Southern Ocean.

"A bleached fragment of the same plant from a freshwater pool [on Marion Island], accidentally conveyed by birds (?), had on it a minute *Conferva* and a *Sphærozyga*, both too imperfect for recognition."—*Dickie.*

CHLOROSPERMEÆ.

Confervaceæ.

Chroolepus aureum, Kütz.

Chroolepus aureum, Kütz., Phyc. Gener., p. 284, et Sp. Alg., p. 426; Dickie in Journ. Linn. Soc. Lond., xv. p. 43.

Marion Island. *Moseley.*

All over Europe, and in most of the islands of the Southern Ocean, New Zealand, &c.

THE CROZETS.

INTRODUCTORY NOTES.

The natural history of this group of islands is still imperfectly known, but the few plants that have been collected are common to them and Marion, Kerguelen, and Heard Islands. Like Sir James Ross's Antarctic Expedition, the Challenger Expedition failed to make a landing, in consequence of the high sea and rough weather; and the little information obtained by the former was from some sealers, who boarded the "Terror" from Possession Island, while the Challenger was unable to approach the islands near enough to get more than an idea of their general aspect and configuration. The group consists of several contiguous islands, of which the principal are Possession, Hog, and East Islands, to which may be added Penguin, otherwise called Inaccessible. Possession Island is the largest; it is fifteen to twenty miles long, and about half as broad, and is situated in 47° S. latitude, and 77° 30′ E. longitude. The greatest altitude is estimated at 5000 feet.

Mr Moseley states[1] that the slopes on the eastern side of Possession Island appeared as if clothed with a vegetation similar to that of Marion Island, which, however, did not extend so high up in the mountains.

Eight plants only are known from these islands, six of which were collected by the officers of the United States ship "Monangahela" in Possession Island, and two by Captain J. N. East, of H.M.S. "Comus," who examined the Crozets in 1880 in order to ascertain if any shipwrecked people were there. He reported to the Secretary of the Admiralty, that the Kerguelen Cabbage (*Pringlea*) was abundant on Possession Island, and a plant called "red root," on which the pilot, who had spent some years in the islands, assured him human beings could not only exist but get fat. The plants he collected were fragments of two ferns: *Lomaria alpina*, and *Asplenium obtusatum*, which are in the Herbarium at Kew. There are also specimens of *Pringlea antiscorbutica* and *Azorella selago* in Kew Herbarium from the Crozets. They were sent alive by Mr J. M'Gibbon, superintendent of the Botanic Garden, Cape Town, who obtained them through the master of one of the vessels trading to the islands; but as they died on the passage to Kew, they were dried and preserved.

In addition to these eight plants, the Americans saw "a small vine, with blue flowers, growing among scoriæ," of which, however, they preserved no specimen. The sealers informed the officers of the Challenger Expedition that rabbits and hogs abounded in the islands, but the latter were not wholesome, because of their food.

For an analysis of the composition and affinities of the vegetation of this group, the introductory notes to the flora of Heard Island should be consulted (p. 244).

[1] Notes by a Naturalist on the Challenger, p. 182.

ENUMERATION OF THE PLANTS.

PHANEROGAMÆ.

CRUCIFERÆ.

Pringlea antiscorbutica, R. Br.

Pringlea antiscorbutica, R. Br.; Hook. f., Fl. Antarct., p. 239, t. 90; Kidder in Bull. U.S. Nat. Mus., iii. p. 31.

Possession Island. *Captain J. N. East; United States Expedition.*

There is also a specimen in Kew Herbarium from the group, without any indication of the particular island on which it was gathered, from Mr M'Gibbon.

Prince Edward's group to Heard Island.

ROSACEÆ.

Acæna adscendens, Vahl.

Acæna adscendens, Vahl.; Hook. f., Fl. Antarct., p. 10, et p. 268, t. 96.
Acæna affinis, Hook. f., Fl. Antarct., p. 268, t. 96, B.; Oliv. in Journ. Linn. Soc. Lond., xiv. p. 389; Kidder in Bull. U.S. Nat. Mus., iii. p. 31.

Possession Island. *United States Expedition.*

Scattered all round the south temperate zone, and collected in Marion and Kerguelen Islands.

UMBELLIFERÆ.

Azorella selago, Hook. f.

Azorella selago, Hook. f., Fl. Antarct., p. 284, t. 99; Kidder in Bull. U.S. Nat. Mus., iii. p. 31.

Possession Island.—*United States Expedition;* from the group, without indication of the island—*M'Gibbon.*

Dispersed from Fuegia to Macquarie Island, particulars of which are given in the enumeration of the plants of the Prince Edward and Marion group.

RUBIACEÆ.

Galium antarcticum, Hook. f. (Plate XL.)

Galium antarcticum, Hook. f., Fl. Antarct., p. 303, *bis;* Phil. Trans. Roy. Soc. Lond., clxviii. p. 20.
Galium trifidum, Linn.? D'Urv. in Mém. Soc. Linn. Par., iv. p. 612.

Possession Island. *United States Expedition.*

Fuegia, Falklands, and Kerguelen Island.

COMPOSITÆ.

Cotula plumosa, Hook. f.

Cotula plumosa, Hook. f., Handb. Fl. N. Zeal., p. 141, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 21.
Leptinella plumosa, Hook. f., Fl. Antarct., i. p. 26, t. 20, et ii. p. 308; Kidder in Bull. U.S. Nat. Mus., iii. p. 31.

Possession Island. *United States Expedition.*

Kerguelen, Lord Auckland, Campbell, and Macquarie Islands.

The statement in the Flora Antarctica (ii. p. 308) respecting the distribution of this plant should have been,—*not* found on the American continent.

CRYPTOGAMÆ.

FILICES.

Lomaria alpina, Spreng.

Lomaria alpina, Spreng., Syst. Veg., iv. p. 62; Hook. f., Fl. Antarct., p. 393, t. 150; Hook., Fil. Exot., t. 32; Hook. and Bak., Synop. Fil., p. 178.
Lomaria penna-marina, Mett., ex Kuhn, Fil. Afr., p. 92.

Possession Island. *Captain J. N. East*, 1880; *United States Expedition.*

Found in nearly all the islands and islets of the Southern Ocean. Fuller synonymy and further particulars of the distribution of this fern are given in the enumeration of the plants of the Tristan da Cunha group.

Asplenium obtusatum, Forst.

Asplenium obtusatum, Forst., Fl. Ins. Austr. Prodr., p. 80; Hook., Fil. Exot., t. 46; Hook. and Bak., Synop. Fil., p. 207.

Possession Island. *Captain J. N. East*, 1880.

Independently of the very distinct varieties *obliquum* and *lucidum*, this has a very wide range, extending all round the south temperate zone, including the Tristan da Cunha group as well as Pitcairn and Easter Islands, and, in places, northward into subtropical regions.

MUSCI.

Andreæa marginata, Hook. f. et Wils. ?

Andreæa marginata, Hook. f. et Wils., Fl. Antarct., p. 396, t. 151? ex Kidder in Bull. U.S. Nat. Mus., iii. p. 31.

Possession Island. *United States Expedition.*

The true *Andreæa marginata* has been collected on Hermit Island, Cape Horn, and Kerguelen Island; but the specimen collected by the United States Expedition was too imperfect to be determined with certainty.

KERGUELEN ISLAND.

The flora of Kerguelen Island has so recently been exhaustively treated by Sir Joseph Hooker[1] and other botanists, that there is no necessity for an original investigation of it in this work. Still, this being the largest island of several, including Marion, the Crozets, and Heard, which have exactly the same kind of vegetation, it seems desirable to give an enumeration of the plants here, as well as a few particulars concerning the position, area, and aspect of the island. For the purposes of this work, the following extracts from Mr Moseley's account of the island will suffice.[2] It should be mentioned that Mr Moseley's collection was included by Sir Joseph Hooker in the above-cited elaboration of the flora. The composition and distribution of the elements of the Kerguelen flora are examined and briefly discussed in the ensuing account of the botany of Heard Island.

"Kerguelen Island, or Kerguelen's Land, extends from about lat. 48° 39′ S. to lat. 49° 44′ S. Its southernmost point is therefore in about corresponding latitude to the Lizard in Cornwall, which is a little below 50° N. In longitude, very roughly speaking, Kerguelen Island corresponds with the Island of Rodriguez, the Maldive Islands, Bombay, Tobolsk, and the mouth of the river Obi.

"The extreme length of the island is about eighty-five miles, and the extreme breadth seventy-nine miles; but the coast is so much indented by sounds or fjords, that the area of the island is not more than, very roughly, 2050 square miles, or about three times as great as that of Oxfordshire.

"The island lies within the belt of rain at all seasons of the year, and being reached by no drying winds, and its temperature being kept down by the surrounding vast expanse of sea, has its soil and vegetable covering permanently saturated with moisture. Further, with this fact of constant precipitation of moisture is connected the form of the island itself, since fjord formation is accomplished only by glaciation on a large scale, and this can only occur where there is a constant supply of snow. The island further lies within the line of the Antarctic drift, as do also the Crozets and Prince Edward group; and this cold current must reduce the temperature considerably. It is also within the region of prevailing westerly winds, the course of which is, in the Southern Ocean, untrammelled and undisturbed by barriers of land. Since the line of greatest length of the island lies in a north-west and south-east direction, and the coast-line, though much broken, trends on either side in the same direction, the north-east side is the sheltered one, and that, consequently, where are the safest anchorages, whilst the south-west side is the weather one.[3]

"Throughout, the island is mountainous, made up of a series of steep-sided valleys, separated by ridges and mountain masses, which rise to very considerable heights. Mount Ross, the highest, is

[1] *Philosophical Transactions of the Royal Society of London*, clxviii. pp. 5–93, tt. 1–5.

[2] Notes by a Naturalist on the Challenger, p. 184.

[3] For a brief summary of the climate of Kerguelen by the Rev. A. E. Eaton, see p. 244.

6120 feet in altitude; Mount Richards, 4000 feet; Mount Crozier, 3250; Mount Wyville Thomson, 3160; Mount Hooker, 2600; Mount Moseley, 2400. Therefore, when viewed from the sea at a distance, the island presents a remarkable jagged outline of sharp peaks, which is most strikingly observed from the south side. All the valleys run down to the sea, broadening out as they approach it; and the coast is broken up everywhere by deep sounds or fjords, which resemble closely in form the fjords of Norway, and of all other parts of the world where fjords exist. They are long channel-like excavations of the coast-line, occupied by arms of the sea, often shallower at the mouths than at the upper extremities, and bounded on either hand by perpendicular cliffs.

"Kerguelen is of volcanic formation as far as it has yet been investigated, and there is no doubt that it is entirely so formed, the beds of coal alone excepted, and certain beds of red earth, which are of the same origin as the coal, but merely different in that they have undergone a more intense heating. It has undergone immense denudation, and on its whole north-eastern and southern regions there is no trace of any volcanic cone or signs of comparatively modern volcanic action, as at Marion Island. Every appearance bespeaks considerable antiquity. Nevertheless, it seems to be certain that there exists towards the south-west of the island a still active volcano, with hot springs in its neighbourhood. We fell in with an American whaling captain, Captain Fuller, who has been often on the weather shore, and is well acquainted with the position of the volcano, and though he had not been actually at it himself, some of his men had; and in Tristan da Cunha we received independent testimony in the matter from old sealers.

"The appearance of the island in the region of the volcano must thus be very different from that of the north-eastern and south-eastern portions. As necessarily follows from the presence of fjords, the whole of the lower rock surface of the island shows most marked evidence of glaciation. Christmas Harbour, almost on the extreme north of the island, is a small example of one of the fjords. It is a deep inlet, with dark frowning cliffs on either hand at its entrance; the land on either side running out into long narrow promontories, which separate the harbour from another similar fjord on the south and from a bay on the north. The promontories thus formed are high, and bounded throughout almost their entire stretch by sheer precipices on either hand. On the north side only of Christmas Harbour, somewhat above its mouth, does the land rise in a steep, broken slope, which can be ascended directly from the sea.

"At the termination seawards of the southern promontory is the well-known arched rock of Christmas Harbour, a roughly rectangular, oblong mass, evidently formerly continuous directly with the rest of the promontory, but now separated from it, except at its very base, by a chasm, and perforated so as to form an arch. Above the high cliffs on the south side of the harbour towers up a huge and imposing mass of black-looking rock with perpendicular faces; this overhanging somewhat towards the harbour, from the weathering out of soft strata beneath it, looks as if it might fall some day and fill the upper part of the harbour. On the north side rises a flat-topped, rocky mass 1215 feet in height, called Table Mountain.

"At the head of the harbour is a sandy beach and small stretch of flat land, as exists at the heads of all the fjords; and beyond this the land rises in a series of steps, separated by short cliffs towards the bases of Table Mountain and the great rock on the south.

"The flat stretch of land at the head of Christmas Harbour is covered with a thick, rank growth of grass (*Festuca cookii*), and a composite herb with feathery leaves and yellow flower (*Cotula plumosa*), also with *Azorella*, as at Marion Island, with *Acæna*, *Montia fontana*, and *Callitriche verna* about the dampest places. The soil is black and peaty, and saturated with water. It is almost impossible to

find anything to burn; the *Azorella* is the only thing that will burn, and sometimes pieces of this may be found that are dry enough, in places where bunches of it overhang small precipices, and the water can thus drip away.

"The feature which distinguishes the general appearance of the vegetation of Christmas Harbour from that of Marion Island is the presence of the Kerguelen cabbage (*Pringlea antiscorbutica*) in large quantities. The plant grows on the slopes and bases of the cliffs in thick beds. The cabbage is in appearance like a small garden cabbage, but often with a long trailing stalk. It is, however, not annual but perennial, and the flowering stalks, instead of coming out from the centre of the head, come out laterally from the sides of the stalks between the leaves.

"The old flower-stalks die and wither, but do not drop off. I counted on one cabbage at Betsy Cove, twenty-eight flowering stalks of different ages, three of them only being of the current year's growth, and fresh. Altogether, they appeared to belong to eight successive years. About Christmas Harbour the cabbage was either in flower or green fruit, mostly the latter. It was only in the south of the island, about Royal Sound, that ripe seed was met with; but there, especially at Mutton Cove, it was abundant.

"Crawling about the heart of the cabbages, and sheltering there, were found swarms of the curious wingless fly, likewise peculiar to Kerguelen and the other islands where the cabbage grows. The fly (*Calycopteryx moseleyi*, Eaton) is simply a long-legged brown insect, with very minute rudimentary wings. It crawls about lazily on the cabbage, and lays its eggs in the moisture between the leaves, near the heart of the plant.

"Another fly (*Amalopteryx maritima*), with wings rudimentary but larger in proportion to the body than in the other, is found about the rocks on the sea-shore, where it jumps about when hunted, like a small grasshopper. It is the same as found at Marion Island, where it was discovered by von Willemoes Suhm. Probably the fly frequenting the cabbage also exists at Marion Island; but we did not know where to look for it when there, and cabbages were not very abundant; but it is possible, also, that it does not extend there, for we saw no teal on Marion Island, though they exist in abundance on the Crozets, and especially on Possession Island, where, as we were told by the sealers, there is a lake full of them. However, we examined but a very small tract of Marion Island, and similar tracts are to be found in Kerguelen Island, with very few cabbages and consequently without teal. Both animals may abound in parts of Marion Island not visited by us.

"A wingless gnat (*Halirytus amphibius*) also inhabits the sea-shore, living amongst the seaweed constantly wetted by the tide. I discovered at the Falkland Islands a similar wingless gnat, and a fly which I believe to be closely allied to the Kerguelen *Amalopteryx*, and which thus adds to those already known a further interesting link between the forms of life inhabiting these widely separated islands.

"I mounted up the slope towards Table Mountain. The climb is up a succession of steps, the successive flat ledges presenting glaciated surfaces scattered over with stones fallen from above. The thick rank vegetation ceases at about 300 feet altitude, and then becomes more sparse. *Colobanthus kerguelensis*, a plant peculiar to Kerguelen and Heard Islands, affects the more barren stony ground at this elevation, and I did not meet with it anywhere about the lower slopes, or amongst the peaty soil. On Heard Island it grows at the sea-level.

"At about 500 feet elevation, a very handsome lichen (*Neuropogon taylori*) commences rather abruptly. It is very conspicuous, being of a mingled bright sulphur-yellow and black colour, and of large size. This lichen is abundant on the higher rocks everywhere. *Azorella* and *Pringlea* grow

up to about 1000 feet, the height of the ridge from which the rocky mass forming the top of Table Mountain rises. Here *Pringlea* ceases, but *Azorella* is continued in very small quantities to the top of the mountain, growing on its very summit, but only in sheltered corners between rocks, and there much dwarfed.

"*Azorella*, *Pringlea*, and a grass (*Agrostis magellanica*) were the only flowering plants at 1000 feet, and these were only very sparsely represented. The land at this height presented a series of ridges of barren rock and piles of stones. At Mutton Cove and about Royal Sound, a very marked line, at about 1000 feet, separates the green lower slopes from the barren stony ridges and peaks above. It is probably the line above which snow lies for the greater part of the year unmelted, though the hills just above it, at Mutton Cove, were quite free from snow at the time of our visit.

"In a pool of water, on the summit of Table Mountain, I found a quantity of specimens of a small *Lumbriculus*, or allied form of Annelid. The phonolith of which Table Mountain is composed is full of olivine crystals, occurring in large rounded masses as in the Ardêche valley, and many other volcanic districts.

"A comparatively low ridge separates the head of Christmas Harbour from the sea directly beyond. On a flat expanse of this ridge are two small freshwater lakes, in which grow two water plants, *Limosella aquatica* and *Nitella antarctica*, both widely spread plants.

"I found *Limosella aquatica* only in these particular lakes, and then only after a very long search, since it resembles extremely closely, in its general appearance when growing in masses, *Ranunculus moseleyi*, which grows with it in the water.

"Above the lakes the ridge rises somewhat, and then terminates in an inaccessible precipice fronting the sea, with short talus slopes below, on which are rookeries of crested penguins. Under the peculiar overhanging rock on the south of the harbour are beds of fossil wood, and the excavation beneath its base is hence called Fossilwood Cave. The wood occurs in beds lying nearly horizontal, and a few feet only in thickness."

ENUMERATION OF THE PLANTS.[1]

PHANEROGAMÆ.

RANUNCULACEÆ.

Ranunculus crassipes,[2] Hook. f.

Ranunculus crassipes, Hook. f., Fl. Antarct., p. 224, t. 81, et in Phil. Trans. Roy. Soc. Lond., clxviii p. 17.

KERGUELEN ISLAND.—Christmas Harbour, Observatory, and Swain's Bay, Royal Sound.

Ranunculus trullifolius, Hook. f.

Ranunculus trullifolius, Hook. f., Fl. Antarct., p. 226, t. 82, A., et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 17, t. 1.

KERGUELEN ISLAND.—In streamlets and lakes, Royal Sound, Swain's Bay, Betsy Cove.

Ranunculus moseleyi, Hook. f.

Ranunculus moseleyi, Hook. f. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 18, t. 2, fig. 1.

KERGUELEN ISLAND.—In the lake at Christmas Harbour.

CRUCIFERÆ.

Pringlea antiscorbutica, R. Br.

Pringlea antiscorbutica, R. Br. ; Hook. f., Fl. Antarct., p. 238, t. 90, 91 ; Kidder in Bull. U.S. Nat. Mus., No. 321 ; Oliver in Journ. Linn. Soc. Lond., xiv. p. 389 ; Dyer in Proc. Linn. Soc. Lond. 1874, xxxiv. ; Hook. f., in Phil. Trans. Roy. Soc. Lond., clxviii. p. 18, t. 2, fig. 3.

KERGUELEN ISLAND.—Throughout the island.

[1] Restricted to a list, with the necessary references, and the distribution within the island, extracted from Sir Joseph Hooker's paper on the botany of the island (*Phil. Trans. Roy. Soc. Lond.*, clxviii.), where the various collectors are enumerated. Particulars of the general distribution of the vascular plants will be found in a tabular form in the Report on the Botany of Heard Island (p. 244).

[2] Although the original specimens of this are very distinct from the ordinary *Ranunculus biternatus*, intermediate forms have been collected, and we have authority for saying that Sir Joseph Hooker would now give it the rank of a variety rather than an independent species.

CARYOPHYLLEÆ.

Colobanthus kerguelensis, Hook. f.

Colobanthus kerguelensis, Hook. f., Fl. Antarct., p. 249, t. 92, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 19.

KERGUELEN ISLAND.—Christmas Harbour, Swain's Bay, &c.

Lyallia kerguelensis, Hook. f.

Lyallia kerguelensis, Hook. f., Fl. Antarct., p. 548, t. 122; Kidder in Bull. U.S. Nat. Mus., No. 3, p. 22; Oliver in Journ. Linn. Soc. Lond., xiv. p. 390; Dyer in Proc. Linn. Soc. Lond., 1874, xxxiv.; Hook. f. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 19, t. 2, fig. 2.

KERGUELEN ISLAND.—Christmas Harbour and Royal Sound.

PORTULACEÆ.

Montia fontana, Linn.

Montia fontana, Linn.; Hook. f., Fl. Antarct., p. 278, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 20.

KERGUELEN ISLAND.—Common in wet places.

ROSACEÆ.

Acæna adscendens, Vahl.

Acæna adscendens, Vahl, Enum. Pl., i. p. 297; Oliver in Journ. Linn. Soc. Lond., xiv. p. 389.
Acæna affinis, Hook. f., Fl. Antarct., p. 268, t. 96, B., et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 20.

KERGUELEN ISLAND.—Common throughout the island.

HALORAGEÆ.

Callitriche verna, Linn., subsp. *obtusangula*, Hook. f.

Callitriche verna, Linn., subsp. *obtusangula*, Hook. f. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 20.
Callitriche obtusangula, Le Gall.; Hegelm., Monog. Gatt. Callit., p. 54.
Callitriche antarctica, Engelm. ex Hegelm. l. c.; Kidder in Bull. U.S. Nat. Mus., No. 3, p. 23.
Callitriche verna, Hook. f., Fl. Antarct., p. 272.

KERGUELEN ISLAND.—Common in wet places.

CRASSULACEÆ.

Tillæa moschata, DC.

Tillœa moschata, DC.; Hook. f., Handb. Fl. N. Zeal., p. 61, et in Phil. Trans. Roy. Soc. Lond. clxviii. p. 20; Hook., Ic. Pl., t. 535.
Bulliarda moschata, D'Urv. in Mém. Soc. Linn. Par., iv. p. 618.
Bulliarda magellanica, DC. in Bull. Philom., n. 49.
Crassula moschata, Forst. in Comm. Soc. Gœtt., ix. p. 26 (reprint, p. 16).

KERGUELEN ISLAND.—Abundant in moist places near the sea.

UMBELLIFERÆ.

Azorella selago, Hook. f.

Azorella selago, Hook. f., Fl. Antarct., p. 284, t. 99, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 20.

KERGUELEN ISLAND.—Very abundant throughout the island.

RUBIACEÆ.

Galium antarcticum, Hook. f. (Plate XL.)

Galium antarcticum, Hook. f., Fl. Antarct., p. 303 *bis*, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 20.

KERGUELEN ISLAND.—Common, but not found at Christmas Harbour.

COMPOSITÆ.

Cotula (Leptinella) plumosa, Hook.

Cotula (*Leptinella*) *plumosa*, Hook. f., Fl. Antarct., p. 26 et 308, t. 20, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 21.

KERGUELEN ISLAND.—On cliffs, especially near the sea, often forming immense luxuriant blue-green patches where the soil is enriched by the dung of birds and seals.

SCROPHULARINEÆ.

Limosella aquatica, Linn.

Limosella aquatica, Linn.; Hook. f., Handb. Fl. N. Zeal., p. 204, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 21.

KERGUELEN ISLAND.—Common in the freshwater lagoon at Christmas Harbour.

JUNCACEÆ.

Juncus scheuchzerioides, La Harpe.

Juncus scheuchzerioides, La Harpe, ex Gaud. in Ann. Sc. Nat., v. p. 100; Hook. f., Fl. Antarct., pp. 79, 358, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 21.

KERGUELEN ISLAND.—Common in spongy places.

CYPERACEÆ.

Uncinia compacta, R. Br.

Uncinia compacta, R. Br.; Boott in Hook. f. Fl. Tasman., ii. p. 103, t. 153, B.; Hook. f. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 21.

Uncinia moseleyana, Bœckel. in Flora, 1878, p. 170.

KERGUELEN ISLAND.—Royal Sound and Observatory Bay.

GRAMINEÆ.

Deschampsia antarctica, Hook.

Deschampsia antarctica, Hook., Ic. Pl., t. 150 (*Aira*); Hook. f., Fl. Antarct., p. 377, t. 133, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 21.

KERGUELEN ISLAND.—Common, and ascending to considerable altitudes.

Agrostis magellanica, Lamk.

Agrostis magellanica, Lamk.; Hook. f., Fl. Antarct., p. 373, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 21.
Agrostis antarctica, Hook. f., Fl. Antarct., p. 373, t. 132.
Agrostis multicaulis, Hook. f., Fl. Antarct., p. 95.

KERGUELEN ISLAND.—Common throughout the island.

Poa cookii, Hook. f.

Poa cookii, Hook. f. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 22.
Festuca cookii, Hook. f., Fl. Antarct., p. 382, t. 139.

KERGUELEN ISLAND.—Abundant, and ascending to a considerable height. Christmas Harbour, Royal Sound, on a hill.

Festuca erecta, D'Urv.

Festuca erecta, D'Urv.; Hook. f. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 22.

KERGUELEN ISLAND.—Common, and ascending to a considerable elevation.

Festuca kerguelensis, Hook. f.

Festuca kerguelensis, Hook. f. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 22.
Triodia kerguelensis, Hook. f., Fl. Antarct., p. 379.
Poa kerguelensis, Hook. f., Fl. Antarct., t. 138.

KERGUELEN ISLAND.—Common, and ascending to 2000 feet.

CRYPTOGAMÆ.

FILICES.

Cystopteris fragilis, Bernh.

Cystopteris fragilis, Bernh.; Hook. f. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 22.

KERGUELEN ISLAND.—Crevices of rocks near the hill-tops, Royal Sound.

Lomaria alpina, Spreng.

Lomaria alpina, Spreng.; Hook. f. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 23.

KERGUELEN ISLAND.—Common; often forming large beds, but not found at Christmas Harbour.

Polypodium (Grammitis) australe, Mett.

Polypodium (Grammitis) australe, Mett. ; Hook. f. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 23.

KERGUELEN ISLAND.—Crevices of rocks, Observatory Bay.

Polypodium vulgare, Linn., var. *eatoni*.

Polypodium vulgare, Linn. var. *eatoni*, Baker, *venis pellucidis*, in Phil. Trans. Roy. Soc. Lond., clxviii. p. 23.

KERGUELEN ISLAND.—Crevices of rocks by running streams, Observatory Bay.

LYCOPODIACEÆ.

Lycopodium saururus, Lam.

Lycopodium saururus, Lam. ; Spring, Monogr. Lycopod., partie i. p. 21.
Lycopodium selago, Linn., var. *saururus*, Hook. f., Fl. Antarct., p. 394, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 23.

KERGUELEN ISLAND.—Not uncommon throughout the island.

Lycopodium clavatum, Linn., var. *magellanicum*.

Lycopodium clavatum, Linn., var. *magellanicum*, Hook. f., Fl. Antarct., p. 113, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 23.
Lycopodium magellanicum, Swartz.

KERGUELEN ISLAND.—Not uncommon throughout the island, but not met with at Christmas Harbour.

MUSCI.

Ditrichium australe, Mitt.

Ditrichium australe, Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 25.
Cynontodium australe, Mitt. in Journ. Linn. Soc. Lond., xii. p. 42.
Lophiodon strictus, Hook. f. et Wils., Fl. Antarct., p. 130, t. 59, fig. 1.

KERGUELEN ISLAND.

Ditrichium hookeri, Mitt.

Ditrichium hookeri, Mitt. in Phil. Trans. Roy. Soc. Lond. clxviii. p. 25.
Leptotrichum hookeri, C. Müll., Synop. Musc. Frond., i. p. 450.

KERGUELEN ISLAND.

Ditrichium conicum, Mitt.

Ditrichium conicum, Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 25.
Aschistodon conicum, Mont. in Ann. Sc. Nat., sér. 3, iv. p. 100.

KERGUELEN ISLAND.

Asiothecium vaginatum, Mitt.

Asiothecium vaginatum, Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 25.
Dicranum vaginatum, Hook., Musc. Exot., t. 141.

KERGUELEN ISLAND.

Blindia gracillima, Mitt.

Blindia gracillima, Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 26.
Blindia curviseta, Mitt. in Journ. Linn. Soc. Lond., xv. p. 193.

KERGUELEN ISLAND.

Blindia microcarpa, Mitt.

Blindia microcarpa, Mitt. in Journ. Linn. Soc. Lond., xv. p. 65, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 26.

KERGUELEN ISLAND.

Blindia contecta, Mitt.

Blindia contecta, Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 27.
Weisia contecta, Hook. f. et Wils., Fl. Antarct., p. 404, t. 58, f. 3.

KERGUELEN ISLAND.

Dicranum (Isocarpus) tortifolium, Mitt.

Dicranum (Isocarpus) tortifolium, Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 28.
Weisia tortifolia, Hook. f. et Wils., Fl. Antarct., p. 404, t. 152, f. 5.

KERGUELEN ISLAND.

Dicranum (Isocarpus) strictum, Mitt.

Dicranum (Isocarpus) strictum, Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 28.
Weisia stricta, Hook. f. et Wils., Fl. Antarct., p. 404, t. 152, f. 4.

KERGUELEN ISLAND.

Dicranum (Hemicampylus) robustum, Mitt.

Dicranum (Hemicampylus) robustum, Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 28.
Dicranum robustum, var. *lucidum*, Hook. f. et Wils., Fl. Antarct., p. 406, t. 152, f. 8.
Dicranum pungens, var. *lucidum*, Hook. f. et Wils., Fl. Antarct., p. 129, t. 59, f. 1.

KERGUELEN ISLAND.

Dicranum (Hemicampylus) kerguelense, C. Müll.

Dicranum (Hemicampylus) kerguelense, C. Müll., Synop. Musc. Frond., i. p. 370; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 28.
Dicranum coryanum, Schwægr.; Hook. f. et Wils., Fl. Antarct., p. 406.
Cecalyphum dichotomum, Beauv., Prodr., p. 51.

KERGUELEN ISLAND.

Campylopus cavifolius, Mitt.

Campylopus cavifolius, Mitt. in Journ. Linn. Soc. Lond., xii. p. 87, et in Phil. Trans. Roy. Soc. Lond., cxlviii. p. 29.

KERGUELEN ISLAND.

Ceratodon purpureus, Brid.

Ceratodon purpureus, Brid.; Müll., Synop. Musc. Frond., i. p. 646; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 29.

KERGUELEN ISLAND.

Grimmia (Schistidium) apocarpa, Mitt.

Grimmia (*Schistidium*) *apocarpa*, Linn., Sp. Pl., ed. 2, 1579 (*Bryum*); Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 29.

KERGUELEN ISLAND.

Grimmia (Schistidium) falcata, Hook. f. et Wils.

Grimmia (*Schistidium*) *falcata*, Hook. f. et Wils., Fl. Antarct., p. 401, t. 151, f. 8; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 29.

KERGUELEN ISLAND.

Grimmia insularis, Mitt.

Grimmia insularis, Mitt. in Journ. Linn. Soc. Lond., xv. p. 73, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 29.

KERGUELEN ISLAND.

Grimmia (Eugrimmia) kidderi, James.

Grimmia (*Eugrimmia*) *kidderi*, James in Bull. U.S. Nat. Mus., iii. p. 25; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 29.

KERGUELEN ISLAND.

Grimmia (Dryptodon) chlorocarpa, Brid.

Grimmia (*Dryptodon*) *chlorocarpa*, Brid.; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 29.
Racomitrium crispulum, Mitt. in Hook. f. Handb. Fl. N. Zeal., ii. p. 426.

KERGUELEN ISLAND.

Grimmia (Dryptodon) crispulus, Hook. f. et Wils.

Grimmia (*Dryptodon*) *crispulus*, Hook. f. et Wils., Fl. Antarct., pp. 124 et 402, t. 57, f. 9; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 30.

KERGUELEN ISLAND.

Grimmia (Racomitrium) lanuginosa, Mitt.

Grimmia (*Racomitrium*) *lanuginosa*, Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 30.

KERGUELEN ISLAND.

Grimmia (Racomitrium) protensum, A. Braun.

Grimmia (Racomitrium) protensum, A. Braun; Hook. f. et Wils., Fl. Antarct., p. 402; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 30.

KERGUELEN ISLAND.

Grimmia frondosa, James.

Grimmia frondosa, James in Bull. U.S. Nat. Mus., iii. p. 25; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 30.

KERGUELEN ISLAND.

Orthotrichum crassifolium, Hook. f. et Wils.

Orthotrichum crassifolium, Hook. f. et Wils., Fl. Antarct., p. 125, t. 57, f. 8; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 30.

KERGUELEN ISLAND.

Orthotrichum atratum, Mitt.

Orthotrichum atratum, Mitt. in Journ. Linn. Soc. Lond., xv. p. 66, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 30.

KERGUELEN ISLAND.

Orthotrichum rupestre, Schleich.

Orthotrichum rupestre, Schleich.; Brid., Sp. Musc., i. p. 279; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 31.

KERGUELEN ISLAND.

Zygodon brownii, Schwægr.

Zygodon brownii, Schwægr., Suppl., iv. t. 317, B.; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 31.

KERGUELEN ISLAND.

Tortula (Syntrichia) princeps, De Notaris.

Tortula (Syntrichia) princeps, De Notaris; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 31.
Barbula müllerí, Bruch et Schimp., Bryol. Europ., t. 28.
Tortula fuegiana, Mitt. in Journ. Linn. Soc. Lond., xv. p. 174.
Barbula (Syntrichia) magellanica, C. Müll. in Bot. Zeit., 1862, p. 349.
Barbula antarctica, Hampe in C. Müll. Synop. Musc. Frond., i. p. 638.
Tortula antarctica, *Tortula cuspidata*, et *Tortula rubella*, Hook. f. et Wils., Fl. Tasman., t. 172, figs. 8–10.

KERGUELEN ISLAND.

Tortula (Barbula) serrulata, Hook. et Grev.

Tortula (Barbula) serrulata, Hook. et Grev. in Brewst. Edinb. Journ., i. p. 291, t. 12; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 32.

KERGUELEN ISLAND.

Tortula (Barbula) erubescens, Mitt.

Tortula (Barbula) erubescens, Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 32.
Didymodon erubescens, Mitt. in Hook. f. Handb. Fl. N. Zeal., ii. p. 421.

KERGUELEN ISLAND.

Streptopogon australis, Mitt.

Streptopogon australis, Mitt. in Journ. Linn. Soc. Lond., xv. p. 66, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 32.

KERGUELEN ISLAND.

Streptopogon? marginatus, Mitt.

Streptopogon? marginatus, Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 33.
Schistidium marginatum, Hook. f. et Wils., Fl. Antarct., p. 399, t. 151, f. 6.

KERGUELEN ISLAND.

Entosthodon laxus, Mitt.

Entosthodon laxus, Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 34.
Physcomitrium laxum, Hook. f. et Wils., Fl. Antarct., p. 399, t. 151, f. 5.

KERGUELEN ISLAND.

Bartramia (Philonotis) appressa, Hook. f. et Wils.

Bartramia (Philonotis) appressa, Hook. f. et Wils., Fl. N. Zeal., ii. p. 89, t. 86, f. 5; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 34.

KERGUELEN ISLAND.

Bartramia (Philonotis) australis, Mitt.

Bartramia (Philonotis) australis, Mitt. in Hook. f. Handb. Fl. N. Zeal., p. 448, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 34.

KERGUELEN ISLAND.

Bartramia (Breutelia) pendula, Hook.

Bartramia (Breutelia) pendula, Hook., Musc. Exot., t. 21; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 34.

KERGUELEN ISLAND.

Bartramia (Eubartramia) patens, Brid.

Bartramia (Eubartramia) patens, Brid., Sp. Musc., iii. p. 82; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 34.

KERGUELEN ISLAND.

Bartramia (Eubartramia) robusta, Hook. f. et Wils.

Bartramia (Eubartramia) robusta, Hook. f. et Wils., Fl. Antarct., t. 59; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 34.

KERGUELEN ISLAND.

Bartramia flavicans, Mitt.

Bartramia flavicans, Mitt.; James in Bull. U.S. Nat. Mus., iii. p. 26; Hook., Kew Journ., 1855, p. 55; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 34.

KERGUELEN ISLAND.

Bryum (Webera) nutans, Schreb.

Bryum (Webera) nutans, Schreb.; Hedw., Musc. Frond., i. t. 4; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 34.

KERGUELEN ISLAND.

Bryum (Webera) elongatum, Dicks.

Bryum (Webera) elongatum, Dicks., fide Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 34.

KERGUELEN ISLAND.

Bryum (Webera) crudum, Mitt.

Bryum (Webera) crudum, Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 34.
Mnium crudum, Hedw., Musc. Frond., i. t. 88.

KERGUELEN ISLAND.

Bryum (Webera) albicans, Wahlenb.

Bryum (Webera) albicans, Wahlenb.; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 34.

KERGUELEN ISLAND.

Bryum (Eccremothecium) pendulum, Hornsch.

Bryum (Eccremothecium) pendulum, Hornsch.; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 34.

KERGUELEN ISLAND.

Bryum (Eccremothecium) eatoni, Mitt.

Bryum (Eccremothecium) eatoni, Mitt. in Journ. Linn. Soc. Lond., xv. p. 195, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 35.

KERGUELEN ISLAND.

Bryum (Eccremothecium) bimum, Schreb.

Bryum (Eccremothecium) bimum, Schreb.; Bryol. Europ., t. 21; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 35.

KERGUELEN ISLAND.

Bryum (Eccremothecium) alpinum, Linn.

Bryum (Eccremothecium) alpinum, Linn. ; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 35.

KERGUELEN ISLAND.

Bryum (Eccremothecium) argenteum, Linn.

Bryum (Eccremothecium) argenteum, Linn. ; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 35.

KERGUELEN ISLAND.

Bryum (Eccremothecium) kerguelense, Mitt.

Bryum (Eccremothecium) kerguelense, Mitt. in Journ. Linn. Soc. Lond., xv. p. 67, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 35.

KERGUELEN ISLAND.

Bryum lævigatum, var. β, Hook. f. et Wils.

Bryum lævigatum, var. β, Hook. f. et Wils., Fl. Antarct., p. 415, t. 154, f. 3 ; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 36.

KERGUELEN ISLAND.

Bryum wahlenbergii, Schwæg.

Bryum wahlenbergii, Schwæg., Suppl., i., ii. p. 92, t. 70 ; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 36.

KERGUELEN ISLAND.

Bryum warneum, Bland.

Bryum warneum, Bland. ; James in Bull. U.S. Nat. Mus., iii. p. 26 ; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 36.

KERGUELEN ISLAND.

Bryum gayanum, Mont.

Bryum gayanum, Mont. ; James in Bull. U.S. Nat. Mus., iii. p. 26 ; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 36.

KERGUELEN ISLAND.

Bryum torquescens, Bruch. et Schimp.

Bryum torquescens, Bruch. et Schimp. ; James in Bull. U.S. Nat. Mus., iii. p. 26 ; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 36.

KERGUELEN ISLAND.

Bryum pallescens, Schwæg.

Bryum pallescens, Schwæg. ; James in Bull. U.S. Nat. Mus., iii. p. 26 ; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 36.

KERGUELEN ISLAND.

Mielichhoferia campylocarpa, Mitt.

Mielichhoferia campylocarpa, Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 36.
Weisia campylocarpa, Hook. et Arn. in Hook. Ic. Pl., t. 136.

KERGUELEN ISLAND.

Plagiothecium antarcticum, Mitt.

Plagiothecium antarcticum, Mitt. in Journ. Linn. Soc. Lond., xv. p. 71, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 36.

KERGUELEN ISLAND.

Plagiothecium donianum, Sm.

Plagiothecium donianum, Sm. ; James in Bull. U.S. Nat. Mus., iii., p. 26 ; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 37.

KERGUELEN ISLAND.

Acrocladium politum, Mitt.

Acrocladium politum, Mitt. in Journ. Linn. Soc. Lond., xii. p. 531, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 37.
Hypnum politum, Hook. f. et Wils., Fl. Antarct., ii. t. 154, f. 2.

KERGUELEN ISLAND.

Stereodon cupressiformis, Linn. (*Hypnum*).

Stereodon cupressiformis, Linn. (*Hypnum*) ; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 37.

KERGUELEN ISLAND.

Amblystegium uncinatum, Hedw.

Amblystegium uncinatum, Hedw. (*Hypnum*) ; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 37.

KERGUELEN ISLAND.

Amblystegium fluitans, Linn.

Amblystegium fluitans, Linn. (*Hypnum*) ; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 37.

KERGUELEN ISLAND.

Amblystegium riparium, Linn.

Amblystegium riparium, Linn. (*Hypnum*) ; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 37.

KERGUELEN ISLAND.

Amblystegium kerguelense, Mitt.

Amblystegium kerguelense, Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 37.

KERGUELEN ISLAND.

Amblystegium decussatum, Mitt.

Amblystegium decussatum, Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 38.
Hypnum decussatum, Hook. f. et Wils., Fl. N. Zeal., ii. t. 90, f. 2.

KERGUELEN ISLAND.

Sciaromium conspissatum, Mitt.

Sciaromium conspissatum, Mitt. in Journ. Linn. Soc. Lond., xii. p. 572, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 38.
Hypnum conspissatum, Hook. f. et Wils., Fl. Antarct., p. 419, t. 155, f. 3.

KERGUELEN ISLAND.

Brachythecium subpilosum, Mitt.

Brachythecium subpilosum, Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 38.
Hypnum subpilosum, Hook. f. et Wils., Fl. Antarct., p. 418, t. 154, f. 4.

KERGUELEN ISLAND.

Brachythecium salebrosum, Hoffm. (*Hypnum*).

Brachythecium salebrosum, Hoffm. (*Hypnum*); Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 38.
Hypnum rutabulum, var. 4, Hook. f. et Wils., Fl. Antarct., p. 417.

KERGUELEN ISLAND.

Brachythecium paradoxum, Mitt.

Brachythecium paradoxum, Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 39.
Hypnum paradoxum, Hook. f. et Wils., Fl. Antarct., p. 449, t. 155, f. 2; Hook. f., Handb. Fl. N. Zeal., p. 479.

KERGUELEN ISLAND.

Psilopilum trichodon, Mitt.

Psilopilum trichodon, Mitt. in Journ. Linn. Soc. Lond., xii. p. 607, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 39.
Polytrichum trichodon, Hook. et Wils. in Hook. Lond. Journ. Bot., 1847, p. 290.

KERGUELEN ISLAND.

Pogonatum alpinum, Brid.

Pogonatum alpinum, Brid., Bryol. Univ., ii. p. 129; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 39.

KERGUELEN ISLAND.

Catharina (Atrichum) compressa, C. Müll.

Catharina (*Atrichum*) *compressa*, C. Müll., Synop. Musc. Frond., i. p. 95; James in Bull. U.S. Nat. Mus., iii. p. 26; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 39.
Polytrichum compressum, Hook. f. et Wils., Fl. Antarct., p. 410, t. 153, f. 8.

KERGUELEN ISLAND.

Andreæa acuminata, Mitt.

Andræa acuminata, Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 39.
Andræa acutifolia, var. γ, Hook. f. et Wils., Fl. Antarct., p. 396.

KERGUELEN ISLAND.

Andreæa squarrosa, Mitt.

Andræa squarrosa, Mitt. in Journ. Linn. Soc. Lond., xii. p. 629, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 39.
Andræa alpina, var. 1, Hook. f. et Wils., Fl. Antarct., p. 395.

KERGUELEN ISLAND.

Andreæa marginata, Hook. f. et Wils.

Andræa marginata, Hook. f. et Wils., Fl. Antarct., p. 396, t. 151, f. 1; James in Bull. U.S. Nat. Mus iii. p. 25; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 39.

KERGUELEN ISLAND.

Since the appearance of the Botany of Kerguelen Island, in which Mr Mitten described or enumerated all the mosses collected by the naturalists of the various English expeditions, Dr Karl Mueller has published in Engler's Botanische Jahrbücher für Systematik, Pflanzengeschichte und Pflanzengeographie, 1884, pp. 76–88, short diagnoses of what he regards as new species of mosses collected by Dr Naumann of the German "Gazelle" Expedition. The following is a list of eighty proposed new species from the island of Kerguelen:—

Andreæa subappendiculata, Andreæa aterrima, Andreæa parallela, Andreæa naumanni, Andreæa flabellata, Andreæa nana, Andreæa squamata, Entosthodon antarcticus, Catharinea (*Psilopilum*) *antarctica, Polytrichum* (*Eupolytrichum*) *microcephalum, Polytrichum* (*Eupolytrichum*) *tuberculosum, Polytrichum* (*Pogonatum?*) *austro-alpinum, Mielochhoferia kerguelensis, Bryum* (*Eubryum*) *pymæum, Bryum* (*Eubryum*) *micro-lævigatum, Bryum* (*Eubryum*) *splachnoideum, Bryum* (*Eubryum*) *austro-cespiticium, Bryum* (*Eubryum*) *gemmaceolum, Bryum* (*Eubryum*) *robustulum, Bryum* (*Eubryum*) *macrantherum, Bryum* (*Eubryum*) *validinervium, Bryum* (*Eubryum*) *orthotheciellæ, Bryum* (*Senodictyon*) *austro-albicans, Bryum* (*Senodictyon*) *austro-crudum, Bryum* (*Senodictyon*) *austro-elongatum, Bryum* (*Senodictyon*) *austro-nutans, Bryum* (*Senodictyon*) *austro-polymorphum, Bryum* (*Senodictyon*) *aptychoides, Blindia aschistodontoides, Blindia tortelloides, Blindia dryptodontoides, Blindia pulvinata, Dicranum* (*Oncophorus*) *arctoæoides, Bartramia* (*Eubartramia*) *chrysura, Bartramia* (*Vaginella*) *diminutiva, Bartramia* (*Philonotis*) *graminicola, Bartramia* (*Philonotis*) *anisothecioides, Bartramia* (*Philonotis*) *polymorpha, Bartramia* (*Philonotula*) *subexigua, Pottia* (*Eupottia*) *fusco mucronata, Pottia* (*Eupottia*) *naumanni, Pottia* (*Eupottia*) *ædipodioides, Barbula* (*Senophyllum*) *validinervia, Barbula* (*Syntrichia*) *gehcebiæopsis, Barbula* (*Syntrichia*) *semirubra, Barbula* (*Syntrichia*) *hyalinotricha, Barbula* (*Syntrichia*) *calobolax, Trichostomum*

(*Eutrichostomum*) *austro-alpigenum*, *Orthotrichum* (*Euorthotrichum*) *rupicolum*, *Orthotrichum* (*Ulota*) *phyllantoides*, *Grimmia* (*Platystoma*) *chrysoneura*, *Grimmia* (*Platystoma*) *stylostegia*, *Grimmia* (*Platystoma*) *cupularis*, *Grimmia* (*Platystoma*) *serratomucronata*, *Grimmia* (*Eugrimmia*) *minutifolia*, *Grimmia* (*Eugrimmia*) *rufa*, *Grimmia* (*Eugrimmia*) *pulvinatula*, *Grimmia* (*Eugrimmia*) *stolonifera*, *Grimmia* (*Dryptodon*) *aterrima*, *Grimmia* (*Dryptodon*) *zygodonticaulis*, *Grimmia* (*Dryptodon*) *defoliata*, *Grimmia* (*Dryptodon*) *genuflexa*, *Grimmia* (*Dryptodon*) *orthotrichacea*, *Grimmia* (*Dryptodon*) *suborthotrichacea*, *Grimmia* (*Dryptodon*) *ochracea*, *Grimmia* (*Dryptodon*) *minuta*, *Grimmia* (*Rhacomitrium*) *chrysoblasta*, *Dichelyma* (*Eudichelyma*) *antarcticum*, *Hypnum* (*Brachythecium*) *austro-salebrosum*, *Hypnum* (*Brachythecium*) *austro-glareosum*, *Hypnum* (*Brachythecium*) *curyodictyon*, *Hypnum* (*Drepanocladus*) *austro-aduncum*, *Hypnum* (*Drepanocladus*) *austro-uncinatum*, *Hypnum* (*Drepanocladus*) *austro-fluitans*, *Hypnum* (*Drepanocladus*) *fontinaliopsis*, *Hypnum* (*Plagiothecium*) *austro-pulchellum*, *Hypnum* (*Pseudoleskea*) *chalarocladum*, *Hypnum* (*Pseudoleskea*) *desmiocladum*, *Hypnum* (*Orthotheciella*) *filum*, *Hypnum* (*Orthotheciella*) *austro-catenulatum*.

HEPATICÆ.

Plagiochila heterodonta, Hook. f. et Tayl.[1]

Plagiochila heterodonta, Hook. f. et Tayl., Fl. Antarct., p. 428, t. 157, f. 2; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 40.

KERGUELEN ISLAND.

Plagiochila minutula, Hook. f. et Tayl.

Plagiochila minutula, Hook. f. et Tayl., Fl. Antarct., p. 427, t. 157, f. 1; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 40.

KERGUELEN ISLAND.

Leioscyphus turgescens, Hook. f. et Tayl.

Leioscyphus turgescens, Hook. f. et Tayl., Fl. Antarct., p. 150, t. 64, f. 2; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 40.

KERGUELEN ISLAND.

Leioscyphus pallens, Mitt.

Leioscyphus pallens, Mitt. in Journ. Linn. Soc. Lond., xv. p. 68, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 40.

KERGUELEN ISLAND.

Lophocolea pallidovirens, Hook. f. et Tayl.

Lophocolea pallidovirens, Hook. f. et Tayl., Fl. Antarct., p. 439, t. 159, f. 9; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 41.

KERGUELEN ISLAND.

[1] Many of the names cited by Mitten as generic are only employed as sectional names of the genus *Jungermannia*, by Hook. f. and Wils.

Lophocolea novæ-zealandiæ, Lehm. et Lindenb. (*Jungermannia*).

Lophocolea novæ-zealandiæ, Lehm. et Lindenb. (*Jungermannia*); Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 41.

KERGUELEN ISLAND.

Lophocolea humifusa, Hook. f. et Tayl.

Lophocolea humifusa, Hook. f. et Tayl., Fl. Antarct., p. 436, t. 159, f. 5; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 41.

KERGUELEN ISLAND.

Teinnoma quadripartita, Mitt.

Teinnoma quadripartita, Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 41.
Jungermannia quadripartita, Hook., Musc. Exot., t. 117.

KERGUELEN ISLAND.

Jungermannia cylindriformis, Mitt.

Jungermannia cylindriformis, Mitt. in Journ. Linn. Soc. Lond., xv. p. 196, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 41.

KERGUELEN ISLAND.

Jungermannia leucorhiza, Mitt.

Jungermannia leucorhiza, Mitt. in Journ. Linn. Soc. Lond., xv. p. 68, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 42.

KERGUELEN ISLAND.

Jungermannia colorata, Lehm. et Lindenb.

Jungermannia colorata, Lehm. et Lindenb.; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 42.

KERGUELEN ISLAND.

Solenostoma humilis, Hook. f. et Tayl.

Solenostoma humilis, Hook. f. et Tayl., Fl. Antarct., p. 434, t. 158, f. 6 (*Jungermannia*); Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 42.
Jungermannia inundata, Hook. f., Fl. N. Zeal., p. 128, t. 93, f. 3.

KERGUELEN ISLAND.

Scapania densifolia, Hook.

Scapania densifolia, Hook., Musc. Exot., t. 36 (*Jungermannia*); Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 42.

KERGUELEN ISLAND.

Scapania clandestina, Mont.

Scapania clandestina, Mont., Bot. Crypt. Astrolabe, t. 16, f. 4; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 43.
Balantiopsis incrassata, Mitt. in Journ. Linn. Soc. Lond., xv. p. 197.

KERGUELEN ISLAND.

Gymnomitrium atrocapillum, Hook. f. et Tayl.

Gymnomitrium atrocapillum, Hook. f. et Tayl., Fl. Antarct., p. 423; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 43.

KERGUELEN ISLAND.

Lembidium ventrosum, Mitt.

Lembidium ventrosum, Mitt. in Journ. Linn. Soc. Lond., xv. p. 69, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 43.

KERGUELEN ISLAND.

Herpocladium fissum, Mitt.

Herpocladium fissum, Mitt. in Journ. Linn. Soc. Lond., xv. p. 69, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 44.

KERGUELEN ISLAND.

Tylimanthus viridis, Mitt.

Tylimanthus viridis, Mitt. in Journ. Linn. Soc. Lond., xv. p. 197, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 44.

KERGUELEN ISLAND.

Marsupidium excisum, Mitt.

Marsupidium excisum, Mitt. in Journ. Linn. Soc. Lond., xv. p. 69, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 44.

KERGUELEN ISLAND.

Fossombronia australis, Mitt.

Fossombronia australis, Mitt. in Journ. Linn. Soc. Lond., xv. p. 73, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 45.

KERGUELEN ISLAND.

Fossombronia pusilla, Nees.

Fossombronia pusilla, Nees in G. L. et N. Synop. Hepat., p. 467; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 45.

KERGUELEN ISLAND.

Noteroclada porphyrorhiza, Nees.

Noteroclada porphyrorhiza, Nees; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 45.
Noteroclada confluens, Hook. f. et Tayl., Fl. Antarct., p. 446, t. 161, f. 7.

KERGUELEN ISLAND.

Symphogyna podophylla, Gottsche.

Symphogyna podophylla, Gottsche in G. L. et N., Synop. Hepat., p. 481; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 45.

KERGUELEN ISLAND.

Aneura multifida, Linn.

Aneura multifida, Linn. (*Jungermannia*); Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 45.

KERGUELEN ISLAND.

Aneura pinguis, Linn.

Aneura pinguis, Linn. (*Jungermannia*); Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 45.

KERGUELEN ISLAND.

Marchantia polymorpha, Linn.

Marchantia polymorpha, Linn.; Mitt. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 45.

KERGUELEN ISLAND.

LICHENES.

Lichina antarctica, Cromb.

Lichina antarctica, Cromb. in Journ. Bot., 1876, p. 21, in Journ. Linn. Soc. Lond., xv. p. 181, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 47.

KERGUELEN ISLAND.

Amphidium molybdophlacum, Nyl.

Amphidium molybdophlacum, Nyl. in Journ. Bot., 1875, p. 333 (errone *molybdophæum*); Cromb. in Journ. Linn. Soc. Lond., xv. p. 181, in Journ. Bot., 1877, pp. 103, 106, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 47.
Lecanora melanaspis, Bab. in Fl. Antarct., p. 536 (excl. syn. *Lecanora dichroa*).
Pannaria glaucella, Tuckerm. in Bull. U.S. Nat. Mus., iii. p. 28.

KERGUELEN ISLAND.

Stereocaulon cymosum, Cromb.

Stereocaulon cymosum, Cromb. in Journ. Linn. Soc. Lond., xv. p. 182, in Journ. Bot., 1877, p. 103, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 47.
Stereocaulon corallinum, Hook. f. et Tayl., Fl. Antarct., p. 528.

KERGUELEN ISLAND.

Cladonia fimbriata, Hoffm.

Cladonia fimbriata, Hoffm.; Cromb. in Journ. Linn. Soc. Lond., xv. p. 182, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 47, cum var. *costata*.
Cladonia pyxidata, Linn.; Tuckerm. in Bull. Torr. Bot. Club, October 1875, et in Bull. U.S. Nat. Mus., iii. p. 29.

KERGUELEN ISLAND.

Cladonia cornuta, Linn.

Cladonia cornuta, Linn.; Cromb. in Journ. Linn. Soc. Lond., xvi. p. 220, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 47.

KERGUELEN ISLAND.

Cladonia acuminata, Acharius.

Cladonia acuminata, Acharius; Cromb. in Journ. Linn. Soc. Lond., xv. p. 182, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 47.

KERGUELEN ISLAND.

Neuropogon melaxanthus, Cromb.

Neuropogon melaxanthus, Cromb. in Journ. Linn. Soc. Lond., xv. p. 182, in Journ. Bot., 1877, pp. 103, 106, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 47 (varietates *sorediifer* et *ciliata*).
Usnea sulphurea, Müll.; Tuckerm. in Bull. Torr. Bot. Club, 1875, et in Bull. U.S. Nat. Mus., iii. p. 27.
Ramalina scopulorum, Hook. f. et Tayl., Fl. Antarct., p. 522.

KERGUELEN ISLAND.

Neuropogon taylori, Cromb.

Neuropogon taylori, Cromb. in Journ. Linn. Soc. Lond., xv. p. 183, in Journ. Bot., 1877, p. 103, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 48.
Usnea taylori, Hook. f., Fl. Antarct., p. 521, t. 195, f. 1.

KERGUELEN ISLAND.

Parmelia stygioides, Nyl.

Parmelia stygioides, Nyl.; Cromb. in Journ. Linn. Soc. Lond., xv. p. 183, in Journ. Bot., 1875, p. 333, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 48.

KERGUELEN ISLAND.

Peltigera rufescens, var. *spuria*, DC.

Peltigera rufescens, var. *spuria*, DC.; Cromb. in Journ. Linn. Soc. Lond., xv. p. 183, in Journ. Bot., 1877, p. 103, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 48.
Peltidea venosa, Hook. f. et Tayl., Fl. Antarct., p. 525.

KERGUELEN ISLAND.

Peltigera polydactyla, Acharius, forma *hymenina*, Cromb.

Peltigera polydactyla, Acharius, forma *hymenina;* Cromb. in Journ. Linn. Soc. Lond., xv. p. 183, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 48.
Peltigera polydactyla, Hook. f. et Tayl., Fl. Antarct., p. 524.
Peltigera horizontalis, Acharius; Hook. f. et Tayl., Fl. Antarct., p. 525.

KERGUELEN ISLAND.

Pannaria dichroa, Cromb.

Pannaria dichroa, Cromb. in Journ. Linn. Soc. Lond., xvi. p. 220, in Journ. Bot., 1877, p. 106, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 48.
Lecanora dichroa, Hook. f. et Tayl. in Lond. Journ. Bot., 1844, p. 643.
Parmelia taylori, Tuckerm. in Bull. Torr. Bot. Club, October 1875, et in Bull. U.S. Nat. Mus., iii. p. 28.
Parmelia placodiopsis, Nyl. in Journ. Bot. 1875, p. 334; Cromb. in Journ. Linn. Soc. Lond., xv. p. 183.
Lecanora melanaspis, Acharius; Hook. f. et Tayl., Fl. Antarct., p. 536.

KERGUELEN ISLAND.

Pannaria obscurior, Nyl.

Pannaria obscurior, Nyl.; Cromb. in Journ. Linn. Soc. Lond., xv. p. 183, in Journ. Bot. 1875, p. 334, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 48.

KERGUELEN ISLAND.

Psoroma hirsutulum, Nyl.

Psoroma hirsutulum, Nyl.; Cromb. in Journ. Linn. Soc. Lond., xv. p. 184, in Journ. Bot. 1875, p. 333, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 48.

KERGUELEN ISLAND.

Lecanora (Placopsis) gelida, Linn.

Lecanora (*Placopsis*) *gelida*, Linn.; Hook. f. et Tayl., Fl. Antarct., p. 535; Cromb. in Journ. Linn. Soc. Lond., xv. p. 184, in Journ. Bot. 1877, pp. 104, 106, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 48; (varietates *vitellina* et *lateritia*).

KERGUELEN ISLAND.

Lecanora (Placopsis) macrophthalma, Cromb.

Lecanora (*Placopsis*) *macrophthalma*, Cromb. in Journ. Linn. Soc. Lond., xv. p. 185, in Journ. Bot. 1877, p. 104, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 49.
Urceolaria macrophthalma, Hook. f. et Tayl. in Lond. Journ. Bot. 1844, p. 640.

KERGUELEN ISLAND.

Lecanora (Placodium) elegans, Acharius.

Lecanora (Placodium) elegans, Acharius; Cromb. in Journ. Linn. Soc. Lond., xv. p. 184, in Journ. Bot. 1877, p. 104, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 49.
Lecanora murorum, var. *β*, Hook. f., Fl. Antarct., p. 535.

KERGUELEN ISLAND.

Lecanora subunicolor, Nyl.

Lecanora subunicolor, Nyl.; Cromb. in Journ. Linn. Soc. Lond., xv. p. 184, in Journ. Bot. 1876, p. 19, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 49.

KERGUELEN ISLAND.

Lecanora vitellinella, Nyl.

Lecanora vitellinella, Nyl.; Cromb. in Journ. Linn. Soc. Lond., xv. p. 184, in Journ. Bot. 1875, p. 334, 1877, p. 104, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 49.
Lecanora candelaria, Acharius; Hook. f., Fl. Antarct., p. 537.

KERGUELEN ISLAND.

Lecanora cyphelliformis, Cromb.

Lecanora cyphelliformis, Cromb. in Journ. Linn. Soc. Lond., xvi. p. 220, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 49.

KERGUELEN ISLAND.

Lecanora diphyella, Nyl.

Lecanora diphyella, Nyl.; Cromb. in Journ. Linn. Soc. Lond., xv. p. 184, in Journ. Bot. 1876, p. 21, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 49.

KERGUELEN ISLAND.

Lecanora atrocæsia, Nyl.

Lecanora atrocæsia, Nyl.; Cromb. in Journ. Linn. Soc. Lond., xv. p. 185, in Journ. Bot. 1875, p. 334, 1877, p. 104, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 49.
Lecanora confluens, Hook. f. et Tayl. in Lond. Journ. Bot. 1844, p. 636.
Lecanora albocærulescens, Acharius (?); Bab. in Fl. Antarct., p. 538.

KERGUELEN ISLAND.

Lecanora brocella, Nyl.

Lecanora brocella, Nyl.; Cromb. in Journ. Linn. Soc. Lond., xv. p. 185, in Journ. Bot. 1876, p. 21, 1877, p. 104, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 49.

KERGUELEN ISLAND.

Lecanora umbrina, Acharius.

Lecanora umbrina, Acharius; Cromb. in Journ. Linn. Soc. Lond., xv. p. 185, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 49.

KERGUELEN ISLAND.

Lecanora kerguelensis, Nyl.

Lecanora kerguelensis, Nyl.; Cromb. in Journ. Bot. 1877, p. 106, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 49.
Urceolaria kerguelensis, Tuckerm. in Bull. U.S. Nat. Mus., iii. p. 29.

KERGUELEN ISLAND.

Lecanora sublutescens, Nyl.

Lecanora sublutescens, Nyl.; Cromb. in Journ. Linn. Soc. Lond., xv. p. 186, in Journ. Bot. 1876, p. 21, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 49.

KERGUELEN ISLAND.

[*Lecanora citrina*, Acharius, *Lecanora erythrocarpa*, Fr., and *Lecanora hageni*, Acharius, enumerated in the Flora Antarctica, p. 536, from very imperfect materials, are too doubtful to be enumerated.]

Pertusaria perrimosa, Nyl.

Pertusaria perrimosa, Nyl.; Cromb. in Journ. Linn. Soc. Lond., xv. p. 186, in Journ. Bot. 1877, p. 104, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 50.
Pertusaria communis, DC.; Hook. f. Fl. Antarct., p. 540.

KERGUELEN ISLAND.

Pertusaria subferruginosa, Cromb.

Pertusaria subferruginosa, Cromb. in Journ. Linn. Soc. Lond., xv. p. 186, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 50.

KERGUELEN ISLAND.

Pertusaria cinerea, Nyl.

Pertusaria cinerea, Nyl.; Cromb. in Journ. Linn. Soc. Lond., xv. p. 186, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 50.

KERGUELEN ISLAND.

Lecidea variatula, Nyl.

Lecidea variatula, Nyl.; Cromb. in Journ. Linn. Soc. Lond., xv. p. 186, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 50.

KERGUELEN ISLAND.

Lecidea inundata, Fries.

Lecidea inundata, Fries.; Cromb. in Journ Bot., 1877, p. 106, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 50.
Biatora rubella, Ehrh.; Tuckerm. in Bull. U.S. Nat. Mus., iii. p. 29.

KERGUELEN ISLAND.

Lecidea assimilata, Nyl.

Lecidea assimilata, Nyl.; Cromb. in Journ. Linn. Soc. Lond., xv. p. 187, in Journ. Bot., 1877, p. 104, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 50.
Lecidea aromatica, Acharius, in parte Hook. f. Fl. Antarct., p. 538.

KERGUELEN ISLAND.

Lecidea aromatica, Acharius.

Lecidea aromatica, Acharius; Nyl. in Journ. Bot., 1877, p. 104; Cromb. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 50.

KERGUELEN ISLAND.

Lecidea enteroleuca, Fries?

Lecidea enteroleuca, Fries? Cromb. in Journ. Bot., 1877, p. 106; Tuckerm. in Bull. Torr. Bot. Club, Oct. 1875, et in Bull. U.S. Nat. Mus., iii. p. 30; Cromb. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 50.

KERGUELEN ISLAND.

Lecidea assentiens, Nyl.

Lecidea assentiens, Nyl.; Cromb. in Journ. Linn. Soc. Lond., xv. p. 187, in Journ. Bot. 1875, p. 334, et 1877, p. 105, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 50.
Lecidea contigua, var. *hydrophila*, Bab. in Hook. f., Fl. Antarct., p. 538.

KERGUELEN ISLAND.

Lecidea intersita, Nyl.

Lecidea intersita, Nyl.; Cromb. in Journ. Linn. Soc. Lond., xv. p. 187, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 50.

KERGUELEN ISLAND.

Lecidea phæostoma, Nyl.

Lecidea phæostoma, Nyl.; Cromb. in Journ. Linn. Soc. Lond., xv. p. 187, in Journ. Bot., 1875, p. 334, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 50.

KERGUELEN ISLAND.

Lecidea amylacea, Acharius.

Lecidea amylacea, Acharius; Cromb. in Journ. Linn. Soc. Lond., xv. p. 188, in Journ. Bot., 1877, p. 104, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 50.
Lecidea spilota, Acharius; Bab. in Hook. f., Fl. Antarct., p. 538.
Lecidea rivulosa, Tayl. in Hook. Lond. Journ. Bot., 1844, p. 636.

KERGUELEN ISLAND.

Lecidea subassentiens, Nyl.

Lecidea subassentiens, Nyl. ; Cromb. in Journ. Linn. Soc. Lond., xv. p. 188, in Journ. Bot., 1876, p. 21, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 51.

KERGUELEN ISLAND.

Lecidea perusta, Nyl.

Lecidea perusta, Nyl. ; Cromb. in Journ. Linn. Soc. Lond., xv. p. 188, et in Journ. Bot., 1875, p. 334, et 1877, p. 106 ; et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 51.
Lecidea fuscoatra, Acharius ; Hook. f., Fl. Antarct., p. 539.

KERGUELEN ISLAND.

Lecidea asbolodes, Nyl.

Lecidea asbolodes, Nyl. ; Cromb. in Journ. Linn. Soc. Lond., xv. p. 188, in Journ. Bot., 1876, p. 21, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 51.

KERGUELEN ISLAND.

Lecidea lygomma, Nyl.

Lecidea lygomma, Nyl. ; Cromb. in Journ. Linn. Soc. Lond., xv. p. 189, in Journ. Bot., 1875, p. 334, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 51.

KERGUELEN ISLAND.

Lecidea subcontinua, Nyl.

Lecidea subcontinua, Nyl. ; Cromb. in Journ. Linn. Soc. Lond., xv. p. 189, in Journ. Bot., 1877, pp. 104, 106, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 51 (cum var. *ferrea*).
Urceolaria endochlora, in parte, Hook. f., Fl. Antarct., p. 537.

KERGUELEN ISLAND.

Lecidea eatoni, Cromb.

Lecidea eatoni, Cromb. in Journ. Linn. Soc. Lond., xv. p. 189, in Journ. Bot., 1875, p. 334, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 51.

KERGUELEN ISLAND.

Lecidea homalotera, Nyl.

Lecidea homalotera, Nyl. ; Cromb. in Journ. Bot., 1877, p. 105, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 51.
Urceolaria endochlora, Hook. f. et Tayl. in parte, Fl. Antarct., p. 537.

KERGUELEN ISLAND.

Lecidea disjungenda, Cromb.

Lecidea disjungenda, Cromb. in Journ. Bot., 1877, p. 105, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 51.
Urceolaria endochlora, Hook. f. et Tayl. in parte, Fl. Antarct., p. 537.

KERGUELEN ISLAND.

Lecidea subplana, Nyl.

Lecidea subplana, Nyl.; Cromb. in Journ. Linn. Soc. Lond., xv. p. 189, in Journ. Bot. 1875, p. 334, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 51.

KERGUELEN ISLAND.

Lecidea stephanodes, Stirton.

Lecidea stephanodes, Stirton; Cromb. in Journ. Linn. Soc. Lond., xvi. p. 221; et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 51.

KERGUELEN ISLAND.

Lecidea dicksonii, Acharius.

Lecidea dicksonii, Acharius; Cromb. in Journ. Linn. Soc. Lond., xv. p. 190, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 51.
Lecidea sincerula, Nyl.; Cromb. in Journ. Bot., 1876, p. 22.

KERGUELEN ISLAND.

Lecidea tristiuscula, Nyl.

Lecidea tristiuscula, Nyl.; Cromb. in Journ. Linn. Soc. Lond., xv. p. 190, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 51.

KERGUELEN ISLAND.

Lecidea superjecta, Nyl.

Lecidea superjecta, Nyl.; Cromb. in Journ. Linn. Soc. Lond., xvi. p. 221, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 51.

KERGUELEN ISLAND.

Lecidea myriocarpa, DC.

Lecidea myriocarpa, DC.; Cromb. in Journ. Linn. Soc. Lond., xv. p. 190, in Journ. Bot., 1877, p. 106, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 51, cum var. *erumpente*.

KERGUELEN ISLAND.

Lecidea subplicata, Nyl.

Lecidea subplicata, Nyl.; Cromb. in Journ. Linn. Soc. Lond., xv. p. 190, in Journ. Bot., 1875, p. 334, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 52.

KERGUELEN ISLAND.

Lecidea cerebrinella, Nyl.

Lecidea cerebrinella, Nyl.; Cromb. in Journ. Linn. Soc. Lond., xv. p. 191, in Journ. Bot., 1876, p. 22, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 52.

KERGUELEN ISLAND.

Lecidea stellulata, Tayl.

Lecidea stellulata, Tayl. in Fl. Hibern., p. 118; Cromb. in Journ. Bot., 1877, p. 105; Fl. Antarct., p. 539; Phil. Trans. Roy. Soc. Lond., clxviii. p. 52.

KERGUELEN ISLAND.

Lecidea geographica, Linn.

Lecidea geographica, Linn.; Cromb. in Journ. Linn. Soc. Lond., xv. p. 191, in Journ. Bot., 1877, p. 105, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 52.

Lecidea geographica, var. *urceolata*, Schærer; Bab. in Hook. f., Fl. Antarct., p. 539.

KERGUELEN ISLAND.

Verrucaria tessellatula, Nyl.

Verrucaria tessellatula, Nyl; Cromb. in Journ. Linn. Soc. Lond., xv. p. 191, in Journ. Bot. 1875, p. 335, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 52.

KERGUELEN ISLAND.

Verrucaria obfuscata, Nyl.

Verrucaria obfuscata, Nyl.; Cromb. in Journ. Linn. Soc. Lond., xv. p. 191, in Journ. Bot., 1876, p. 22, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 52.

KERGUELEN ISLAND.

Verrucaria æthiobola, Acharius.

Verrucaria æthiobola, Acharius; Cromb. in Journ. Linn. Soc. Lond., xv. p. 193, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 52.

KERGUELEN ISLAND.

Verrucaria chlorotica, Acharius.

Verrucaria chlorotica, Acharius; Cromb. in Journ. Bot., 1877, p. 106; et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 52.

Sagedia chlorotica, Tuckerm. in Bull. Torr. Bot. Club, et in Bull U.S. Nat. Mus., iii. p. 30.

KERGUELEN ISLAND.

Verrucaria prævalescens, Nyl.

Verrucaria prævalescens, Nyl.; Cromb. in Journ. Linn. Soc. Lond., xv. p. 192, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 52.

KERGUELEN ISLAND.

Verrucaria kerguelina, Nyl.

Verrucaria kerguelina, Nyl.; Cromb. in Journ. Linn. Soc. Lond., xv. p. 192, in Journ. Bot., 1876, p. 22, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 52.

KERGUELEN ISLAND.

Verrucaria insueta, Nyl.

Verrucaria insueta, Nyl.; Cromb. in Journ. Linn. Soc. Lond., xv. p. 192, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 52.

KERGUELEN ISLAND.

Verrucaria congestula, Stirton.

Verrucaria congestula, Stirton.; Cromb. in Journ. Linn. Soc. Lond., xvi. p. 221, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 52.

KERGUELEN ISLAND.

[*Isidium oculatum*, *Isidium lutescens*, and *Lepraria flava*, all enumerated in the Flora Antarctica as doubtful, are imperfect states of Lichens.]

FUNGI.

Very few fungi have been found in Kerguelen. The following are all that are enumerated in the botany of Kerguelen Island :[1]—

Agaricus (*Galera*) *kerguelensis*, *Agaricus* (*Galera*) *hypnorum*, *Agaricus* (*Naucoria*) *furfuraceus*, *Agaricus* (*Naucoria*) *gleborum*, *Agaricus* (*Psalliota*) *campestris*, *Coprinus atramentarius*, *Coprinus tomentosus*, *Peziza* (*Sarcoscyphæ*) *kerguelensis*, *Sphæria herbarum*.

ALGÆ.

The Kerguelen Algæ, both marine and freshwater, are rather numerous. It will, perhaps, be sufficient for the purposes of this work to give a list of the species.

ALGÆ MARINÆ.[2]

Durvillea utilis, *Durvillea harveyi*, *Desmarestia rossii*, *Desmarestia chordalis*, *Desmarestia aculeata*, *Desmarestia viridis*, *Macrocystis pyrifera*, *Lessonia fuscescens*, *Asperococcus sinuosus*, *Dictyosiphon fasciculatus*, *Adenocystis lessonii*, *Scytosiphon lomentarium*, *Elachista flaccida*, *Ectocarpus geminatus*, *Sphacellaria corymbosa*, *Sphacellaria affinis*, *Rhodomela hookeriana*, *Polysiphonia abscissa*, *Polysiphonia anisogona*, *Dasya berkeleyi*, *Bostrychia vaga*, *Delisea pulchra*, *Ptilonia magellanica*, *Melobesia antarctica*, *Melobesia lichenoides*, *Melobesia kerguelena*, *Delesseria lyallii*, *Delesseria davisii*, *Delesseria quercifolia*, *Delesseria crassinervia*, *Nitophyllum fuscorubrum* *Nitophyllum multinerve?* *Nitophyllum lividum*, *Nitophyllum laciniatum*, *Chætangium variolosum*, *Plocamium hookeri*, *Rhodophyllis capensis*, *Rhodymenia palmata*, *Rhodymenia corallina*, *Phyllophora cuneifolia*, *Ahnfeltia plicata*, *Callophyllis*

[1] By the Rev. J. M. Berkeley in *Phil. Trans. Roy. Soc. Lond.*, clxviii. p. 93.

[2] By the late Professor Dickie in *Phil. Trans. Roy. Soc. Lond.*, clxviii. pp. 53–64.

variegata, Callophyllis dichotoma, Callophyllis tenera, Kallymenia dentata, Gigartina radula, Iridæa capensis, Iridæa laminarioides, Epymenia variolosa, Halymenia latissima, Ceramium rubrum, Ceramium diaphanum, Ptilota eatoni, Ballia callitricha, Callithamnion simile, Callithamnion ptilota, Callithamnion rothii, Codium adhærens, Codium tomentosum, Bryopsis plumosa, Vaucheria dillwynii, Ulva latissima, Ulva (?) cristata, Porphyra laciniata, Porphyra vulgaris, Enteromorpha compressa, Enteromorpha intestinalis, Prasiola fluviatilis, Cladophora rupestris, Cladophora arcta, Cladophora simpliciuscula, Cladophora flexuosa, Rhizoclonium riparium, Rhizoclonium ambiguum, Chætomorpha linum.

ALGÆ AQUÆ DULCIS.[1]

Stauroneis goeppertiana, Stauroneis anceps, Stauroneis phœnicenteron, Aclinanthes exilis, Larirella diaphana, Campylodiscus n. sp., *Gomphonema brebissonii, Amphiprora* n. sp., *Navicula elliptica, Navicula dicephala, Navicula minutissima, Navicula* sp., *Amphora gracilis, Pinnularia viridula, Pinnularia viridis, Pinnularia* spp., *Synedra vaucheriæ, Eunotia pectinalis, Denticula thermalis, Cymbella gastroides, Chroococcus macrococcus, Microcystis olivacea, Microcystis parasitica, Gloæthece involuta, Gloœcapsa magna, Anacystis marginata, Leptothrix hyalina, Lyngbya major, Limnactis minutula, Dasyactis kunzeana, Mastigothrix articulata, Mastigothrix æruginea, Mastigothrix minuta, Hydrocoleum eatoni, Nostoc hydrocoleoides, Nostoc polysaccum, Nostoc polysporum, Nostoc* sp., *Nostoc paludosum, Nostoc leptonema, Anabaina confervoides, Anabaina involuta, Hormosiphon leptosiphon, Hormosiphon coriaceus, Schizosiphon kerguelensis, Tolypothrix flaccida, Tolypothrix nægelii, Schizothrix hyalina, Sirosiphon vermicularis, Sirosiphon pulvinatus, Sirosiphon* n. sp., *Sirosiphon kerguelensis, Sirosiphon oliveri, Sirosiphon secundatus, Glœocystis vesiculosa, Palmella mucosa, Pleurococcus vestitus, Pleurococcus angulosus, Scenedesmus acutus, Botryococcus braunii, Oocystis nægelii, Dictyosphærium ehrenbergii, Pediastrum ellipticum, Asterosphærium elegans, Glœocystis botryoides, Glœococcus* sp., *Polyedrium tetratricum, Polyedrium minimi, Chlamydococcus* sp., *Cosmarium pseudo-nitidulum, Cosmarium crenatum, Staurastrum kerguelense, Euastrum binale, Palmoglœa* sp., *Vaucheria sessilis, Vaucheria sericea, Vaucheria pachyderma, Vaucheria geminata, Olpidium caudatum, Chytridium pyriforme, Microthamnion cladophoroides, Stigeoclonium hookeri, Stigeoclonium subtile, Choreoclonium procumbens, Draparnaldia subtilis, Draparnaldia distans, Proterderma viride, Zygogonium torulosi, Zygogonium tenuissimum, Spirogyra longata, Spirogyra* sp., *Sirogonium sticticum, Zygnema vaucheri, Zygnema affine, Bulbochæte* spp., *Oedogonium delicatulum, Oedogonium* sp., *Coleochæte scutata, Coleochæte irregularis, Aphanochæte repens, Gongrosira pachyderma, Rhizocladia repens, Batrachospermum minutissimum.*

[1] By Dr. P. F. Reinsch in *Phil. Trans. Roy. Soc. Lond.*, clxviii. pp. 65–92, 1879.

CHARACEÆ.

Nitella antarctica, Braun.

Nitella antarctica, Braun ; Phil. Trans. Roy. Soc. Lond., clxviii. p. 23.
Nitella hookeri, Reinsch in Journ. Linn. Soc. Lond., xv. p. 219.
Chara flexilis, Linn., Sp. Pl., ed. 2, p. 1624 ; Hook. f., Fl. Antarct., p. 395.

Kerguelen Island.—In the lake at Christmas Harbour ; and in that next but one to the Observatory, in Observatory Bay.

MACDONALD GROUP.

HEARD ISLAND.[1]

INTRODUCTORY NOTES.

This being the last of a series of islands, comprising the Prince Edward Group, the Crozets, and Kerguelen Island, dealt with in this work and enjoying a similar climate and supporting the same kind of vegetation, it is convenient to examine their flora here jointly. But first of all a few words may be said respecting the climate of the islands named, for, although the most southerly of them is not in a higher latitude than the centre of England, the nature, rather than the rigour, of the climate is such as to be very unfavourable to vegetation, not only to flowering plants and ferns but also to the lower cryptogams. This is especially the case in Heard Island, which is still in its glacial epoch. In the extracts which follow from Mr Moseley's notes will be found practically all that is known on the climate of Heard, together with comparisons of the climates of the other islands under consideration. Kerguelen, which lies only some 300 miles north of Heard, has a much milder climate, yet by no means a pleasant one. The Rev. A. E. Eaton, who spent several months there in connection with the Transit of Venus Expedition in 1874–75, describes it in the following terms[2]:—

"The climate of Kerguelen is tempestuous, chilly, and wet . . . gales, or at least strong breezes, being almost constant. The wind is usually westerly and cold. . . . The range of temperature throughout the year does not appear excessive, the highest readings of the thermometer in summer being under 70° Fahr., and the lowest in winter seldom less than 32°. At Christmas Harbour it did not descend below 27° during the stay of the 'Erebus.' Before the English expedition arrived at the island, the Americans, early in September, found the temperature one night to be as low as 18°. In the warmer months the readings are not often much higher than 55° or 56°, or much lower than 42°, on the eastern side of the island. The western coast is, however, much more bleak."

Considering the shortness of the stay of the expedition at Heard Island, Mr Moseley has furnished us with a graphic account of its physical conditions, its flora, and its fauna. True, both animal and vegetable life is little varied, but we learn from his description of the island the reason why it is so. All that bears directly or indirectly on the vegetation is contained in the following somewhat copious but intensely interesting extracts from Mr Moseley's work[3]:—

[1] Called Yong Island by Mr Moseley in *Journ. Linn. Soc. Lond.*, xiv. p. 388.

[2] *Phil. Trans. Roy. Soc. Lond.*, cxlviii. p. 3.

[3] Notes by a Naturalist on the Challenger, p. 216.

"On February 6, after beating about for several days in fog, and lying becalmed during one day, we sighted the northernmost island of the Macdonald Group, which was alternately brightened up by sunshine and hidden in the drifting scud and mist. It consists of a small main rocky mass, and two outliers with a very irregular outline and weather-beaten appearance.

"The main mass is Macdonald Island, and gives the name to the group. It is bounded on all sides by cliffs, which are high towards the eastward, but lower towards the westward. There was no snow on the island, and on one stretch of sloping flat land, a covering of vegetation could be made out similar to that of Heard Island. One of the outliers is in the form of a pinnacle, projecting straight up from the sea.

"We anchored at Heard Island, in Corinthian or Whisky Bay, as it is named by the sealers, in the afternoon, and I landed at once with Captain Nares and Mr Buchanan. Heard Island is in about lat. 53° 10′ S., long. 73° 30′ E., therefore in about the same latitude as the eastern entrance of the Straits of Magellan, and in a corresponding latitude, in the southern hemisphere, to our city of Lincoln in the northern, and it is in nearly the same longitude as Bombay. It is about twenty-five miles in extreme length, and six in extreme breadth, and has an area of about eighty square miles, with an elongate form, stretching in a direction about N.W. by W., and S.E. by E. The southernmost extremity turns eastward, and runs out into a long narrow promontory.

"Whisky Bay is near the northernmost extremity of the island. To the south-east of the ship, as she lay in the small bay, were seen a succession of glaciers descending right down to the beach, and separated by lateral moraines from one another; six of these glaciers were visible from the anchorage, forming by their terminations the coast-line eastwards. They rose with a gentle slope, with the usual rounded undulating surface upwards towards the interior of the island, but their origin was hid in the mist and cloud; and Big Ben, the great mountain of the island, said to be 7000 feet in height, was not seen by us at all.

"One of the glaciers, that nearest to the ship, instead of abutting on the sea-shore directly with its end, as did the others, presented towards its lower extremity its side to the action of the waves, and ending somewhat inland, formed a well-marked but scanty terminal moraine.

"To the sea-shore this glacier presented a vertical wall of ice, resting directly upon the black volcanic sand composing the beach. This wall exhibited a very instructive longitudinal section of the glacier mass, in which the series of curved bands produced by differential motion were most plainly marked, and visible from the distance of the anchorage.

"The ice composing the wall or cliff was evidently being constantly bulged outwards by internal pressure, and masses were thus being split off to fall on the beach, and be melted, or floated off by the tide. The ice splits off along the lines of the longitudinal crevasses, and falls in slabs of the whole height of the cliff; a freshly fallen slab, a longitudinal slice of the glacier, was lying on the beach. Some stones which were dredged in 150 fathoms between Kerguelen Island and Heard Island, Mr Buchanan[1] believed to have been recently dropped by floating ice from Heard Island. The stones in question were as yet not penetrated by the water. The other glaciers in sight cut the shore line at right angles, and thus had no terminal moraines, the stones brought down by them being washed away by the sea. These glaciers showed all the familiar phenomena of those of Europe with exact similarity. There are here the same systems of crevasses, more marked in some regions than others, and dying out towards the termination of the glacier, where the surface is smooth and generally rounded. The crevasses were of the usual deep-blue colour, and the ridges separating

[1] *Proc. Roy. Soc. Lond.*, vol. xxiv., 1876, p. 609.

them of the usual fantastic shapes. Above, the glaciers were covered with snow, which, as one looked higher and higher, was seen to gradually obliterate the crevasses, and assume the appearance of a névé. The extent of glacier free from snow was very small; the region in which thawing can take place to any considerable extent being confined to a range not far above sea-level. Here and there were to be seen, on the surface of the glacier, the characteristic deep, vertical, pipe-like holes full of water, which were lined by concentric layers of ice, composed of prisms disposed radially to the centres of the holes and produced by successive night-frosts. Cones of ice covered with sand, and appearing as if composed of sand alone, but astonishing one by their hard and resistant nature when struck with a stick, were also to be seen on the glacier. I have seen closely similar cones in the Tyrol; and, when a tyro at alpine climbing, have jarred my hand in attempting to thrust my alpenstock into them. Here the sand was black and volcanic. Small table-stones were not uncommon upon the glacier, and, in fact, all the phenomena caused by thawing from the action of direct radiant heat were present. The usual narrow longitudinal lines or cracks caused by the shearing of the ice in its differential motion were present, and gave evidence of the grinding together of the closely opposed surfaces forming them. The dirt and stones on the surface of the ice were, as is commonly the case, more abundant towards the termination of the glacier and the moraine, but they were not so abundant as usual, and there were no large stones amongst them, nor were such to be seen in the moraine.

"The harpooneer of the 'Emma Jane,' the whaling schooner with which we fell in at Kerguelen Island, told me that he had always wondered where the stones on the ice came from at all; and no wonder, for Big Ben is generally hidden from view, and the glaciers seem to have nothing above from which the stones might come. Most of the stones, no doubt, reach the surface and see the light only when they are approaching the bottom of the glacier. The terminal moraine showed the ordinary irregular, conical heaping, and marks of recent motion of the stones and earth composing it from the thawing of the ice supporting them, and a small stream running from the glacier-bed cut its way to the sea through a short arched tunnel in the ice, as so commonly occurs elsewhere. A small cascade poured out of the ice-cliff on to the sea-shore from an aperture about half-way up it. All the moraines showed evidence of the present shrinking of the glaciers.

"The view along the shore of the successive terminations of the glaciers was very fine. I had never before seen a coast-line composed of cliffs and headlands of ice. None of the glaciers came actually down into the sea, but the bases of their cliffs rested on the sandy beach, and were only just washed by the waves at high water, or during gales of wind. The lateral moraines were of the usual form, with sharp-ridged crests and natural slopes on either side, forming lines of separation between the contiguous glaciers. They were somewhat serpentine in course, and two of them were seen to occur immediately above points where the glaciers on either hand were separated by masses of rock *in situ*, which masses showed out between the ice-cliffs on the shore and had the ends of the moraines resting on them. A stretch of perfectly level black sand about half a mile in width forms the head of the bay, and intervenes between the glaciers and a promontory of rocky rising land stretching out northwards and westwards, and forming the other side of the bay, and on the smooth sandy beach bounding this plain we landed. The surf was not heavy, but we had to drag the boat up at once. In this we were helped by six wild-looking sealers, who had made their appearance on the rocks as soon as the ship entered the bay, with their rifles in their hands, and had gazed on us with astonishment. The boss said, as we landed, he 'guessed we were out of our reckoning.' They evidently thought no one could have come to Heard Island on purpose who was not in the sealing business. The sandy plain

stretches back from the bay as a dreary waste to another small curved beach at the head of another inlet of the sea. Behind this inlet is an irregular rocky mountain mass forming the end of the island, on which are two large glaciers very steeply inclined, and one of them terminating in a sheer ice-fall. At its back this mountain mass is bounded by precipices with their bases washed by the sea. The plain is traversed by several streams of glacier water coming from the southern glaciers, and these streams are constantly changing their course, as the beach and plain are washed about by the surf in heavy weather. At the time of our visit, the main stream stretched across the entire width of the plain and entered the sea at the extreme western verge of the beach, so we had to ford it. This stream was about twenty yards across, and knee-deep, and so intensely cold that it pained my legs worse than any glacier water I have ever waded in. The water was brown, opaque, and muddy, being charged with the grindings of the glaciers. Running into the sea, it formed a conspicuous brown tract, sharply defined from the blue-green water of the sea, and extending almost to the mouth of the bay. The sandy plain seemed entirely of glacial origin; it was in places covered with glacial mud, and was yielding, and heavy to walk upon. Mr Buchanan observed that the isolated rocks which had been rolled down upon this plain from the heights above were cut by the natural sand-blast into forms resembling trees on a coast exposed to trade-winds. The effect of every prevalent wind was shown by the facets cut by the blown sand upon the surfaces of the rocks, the largest facet in each case being that turned towards the west.

"The plain was strewed with bones of the sea-elephant and sea-leopard, those of the former being most abundant. There were remains of thousands of skeletons, and I gathered a good many tusks of old males. These bones lay in curved lines, looking like tide lines, on either side of the plain, above the beaches, marking the rookeries of old times and tracks of slaughter of the sealers. Some bones occurred far up on the plain, the elephants having in times of security made their lairs far from the water's edge. A few whales' *vertebræ* were also seen lying about. On the opposite side of the plain from that bounded by the glacier is a stretch of low bare rock, with a peculiar smooth and rounded but irregular surface, which appears from a distance as if glaciated; but on closer examination it is seen to show very distant ripple marks and lines of flow, and the rock-mass is evidently a comparatively recent lava-flow from a small broken-down crater which stands on the shore close by. The remains of the crater are now in the form of three fantastic, irregularly conical masses, composed of very numerous thin layers of scoriæ, conspicuous because of their varying and strongly contrasted colours and very irregular bedding. A section of the lava-flow is seen in the low cliffs forming the line of the harbour. The present condition of Heard Island is evidently that which obtained in Kerguelen Island formerly, when glaciers covered the land almost entirely and dipped down into the sea. It is, however, an extraordinary fact that Heard Island, only 300 miles south of Kerguelen Island, should thus still be in a glacial epoch, whilst in Kerguelen Island, a very much larger tract, the glaciers should have shrunk back into the interior, and have left so much of the land surface entirely free of ice, the ice epoch being there already a thing of the past.

"The great height of Big Ben, and consequent largeness of the area where snow constantly accumulates, and cannot be melted, no doubt accounts to a considerable extent for the peculiar conditions in Heard Island. A similar rapid descent of the snow-line within a few degrees of latitude occurs in the Chilian Andes,[1] so great is the chilling influence of the vast southern sea. As already mentioned, Heard Island is in a corresponding latitude to Lincoln. No doubt when England was in its last glacial epoch, Heard Island enjoyed a much milder climate, and it was possibly then that the

[1] Grisebach, *Die Vegetation der Erde*, Leipzig, 1872.

large trees grew, the trunks of which are now fossil in Kerguelen Island, and that the ancestors of *Lyallia* and *Pringlea* flourished.

"A stretch of land on the north-west side of the plain was covered pretty thickly with green, which was on closer view seen to be composed of patches of *Azorella*, growing on the summits of mud or sand hummocks, which were separated from one another by ditches or cavities of usually bare brown-mud. Some of these patches of *Azorella* were of considerable extent, and the plant was evidently flourishing and in full fruit. On some hummocks grew tufts of *Poa cookii* in full flower, and with the anthers fully developed; and on the sheltered banks of the hummocks *Pringlea antiscorbutica* grew in considerable quantity, but dwarfed in comparison with Kerguelen specimens, both in foliage and in the length of the fruiting stems. Most of it was in fruit, but some still in flower, as at Kerguelen Island.

"Around pools of water in the hollows grew a variety of *Callitriche verna* in quantity, and it occurred also in abundance submerged in company with a Conferva. In the same sheltered spots grew *Colobanthus kerguelensis*, in greater abundance even than at Kerguelen Island. These five flowering plants, all occurring also in Kerguelen Island, were the only ones found in the island, and it is improbable that any others grow there. Heard Island has thus a miserably poor flora, even for the higher latitudes of the southern hemisphere. The Falkland Islands, in lat. 51° to 52° S., have one hundred and nineteen phanerogamic plants, and Hermit Island, far to the south of Heard Island, in lat. 56° S., has eighty-four phanerogams, and amongst them trees which find their southern limit in this island.

"An Antarctic flora can in reality hardly be said to exist, since there are absolutely no phanerogamic plants within the Antarctic Circle, and on Possession Island, lying off the coast of Victoria Land, in about lat. 72° S., within the Circle, Sir Joseph Hooker found only eighteen cryptogams, and no trace of phanerogams. Yet in Saltdalen, in Norway, north of the Arctic Circle, there are fine timber forests and thriving farms, yielding abundant crops of hay and barley. Melville Island, in lat. 74° 75′ N., 500 miles north of the Arctic Circle, has a vegetation of sixty-seven flowering plants.

"Sir J. D. Hooker, in his latest memoir on the botany of Kerguelen Island, says: 'The three small archipelagos of Kerguelen Island (including the Heard Islands), Marion and Prince Edward Islands, and the Crozets, are individually and collectively the most barren tracts on the globe, whether in their own latitude or in a higher one, except such as lie within the Antarctic Circle itself; for no land, even within the North Polar area, presents so impoverished a vegetation.'[1]

"About the sides of the hummocks already described grew scantily four species of mosses, one of which proved to be new and peculiar to the island.

"The greater part of the land surface of Heard Island, free from ice, besides the green tract described, is entirely devoid of vegetation. Only on the talus slopes of the hills, on their sheltered sides, are seen scattered in a very few places scanty patches of green. These, composed lower down mainly of *Azorella*, stretch up the slopes, and terminate at an elevation of a few hundred feet in bright yellow patches, consisting entirely of mosses, just as at Marion Island, on the higher slopes. I searched in vain for lichens of any kind.

"There seems to be a very great difference with regard to the vertical range of plants in these southern islands, and in the Arctic regions. In Marion Island, I estimated the absolute limit of vegetation at an altitude of about 2000 feet; in Kerguelen Island, the limit seems to lie at about 1500 feet or lower; plants of any kind are there already scarce at 1000 feet above sea-level. In Heard Island vegetation appears to cease at 300 or 400 feet altitude. Yet in East Greenland, the

[1] Flora Antarctica, p. 216.

same plants are found to range from sea-level up to 3000 feet, and there is no real limit of altitude; even at 7000 feet elevation a thick cushion of moss, several inches in length, was found by the German North Polar Expedition covering the ground. This remarkable condition in the Arctic regions is mainly accounted for by Dr Pansch from the fact that, with the sun always near the horizon in high latitudes, the hill-slopes receive its rays nearly vertically, and thus receive more radiant heat even than the flat land below them. There is little cooling at night, the clouds and mist preventing radiation.

"In Kerguelen Island, of course, in its low latitude, the inclined surfaces do not profit so much by their inclination. There, as in the high north, the mosses and lichens are the highest plants in range. In the successive groups of islands, Marion, Kerguelen, and Heard, they come lower and lower down the mountain slopes, and in Possession Island, south of the Antarctic Circle, the few flowering plants remaining below them at Heard Island have disappeared, and they are left growing alone.

"In all the southern islands the density of the phanerogamic vegetation, the extent of development of the individual plants, and the number of species present, decrease directly with the height. The facts show how much more the constant absence of warmth, and a continuous moderately low temperature, is inimical to plant development, than is periodical cold of the severest kind. In East Greenland the condition of the vegetation in various localities depends more on the distance of these from the ice barrier than on their position more or less north or south. The vegetation becomes more abundant as progress is made inland, away from the ice-bound coast. Exactly the opposite seems to hold in Kerguelen Island, where the chief source of warmth, though at the same time the constant cause of the equalisation of temperature, is the sea, and where the accumulated snow inland, and its attendant mists, render the soil there barren. In East Greenland, phanerogamic water-plants are absent, because of the long freezing of the water in winter. In the southern island there is a *Limosella*, and a large number of the other phanerogams seem to take on a special aquatic habit.

"To return to Heard Island. At Corinthian Bay, large masses of sea-weeds were banked up on the sandy shore, where I collected eight species, which have been described by Professor Dickie.[1] Amongst them were two new species—two which occur at Kerguelen Island, whilst the remainder occur in Fuegia. The main mass appeared considerably different from the masses of algæ found on the Kerguelen shore. *Durvillea utilis* grew attached to the rocks under the cliffs, but the kelp (*Macrocystis pyrifera*) does not grow at all about this group of islands, according to the sealers, which is a remarkable fact, considering its great abundance at Kerguelen Island.

"The sealers said that the climate of Heard Island was far more rigorous than that of Kerguelen Island. In winter the whole of the ground is frozen, and the streams are stopped, so that snow has to be melted in order to obtain water; but in December, at Midsummer, there is plenty of sunshiny weather, and Big Ben is often to be seen. It is possible to land in whale-boats on the average of the whole year only once in three days, so surf-beaten is the shore, so stormy the weather."

[1] *Journ. Linn. Soc. Lond.*, vol. xv. p. 47.

History of Botanical Discovery in Kerguelen, &c.

Before the visit of the Challenger Expedition nothing whatever was known of the vegetation of Heard and Marion Islands; and although many of the characteristic vascular plants of the region were collected in Kerguelen as long ago as 1766 by Mr Anderson, surgeon of the "Resolution," commanded by Captain Cook, yet they lay almost unknown until Dr (now Sir Joseph) Hooker described them after his return with Sir James Ross's Antarctic Expedition, in 1843. There were among them:—*Azorella selago*, *Cotula plumosa*, *Pringlea antiscorbutica*, *Ranunculus crassipes*, *Poa cookii*, and *Deschampsia antarctica*.

"From 1776 till 1840"—we are now quoting Sir Joseph Hooker[1]—"when the Antarctic Expedition, under Captain (afterwards Admiral Sir James) Ross, anchored in Christmas Harbour, Kerguelen Island is not known to have been visited by any ship of war, or by the discovery or surveying ships of any nation, though it had become the frequent resort of English and American sealers. During the stay of the Antarctic Expedition [of which Sir Joseph Hooker was botanist], all the plants enumerated by Anderson as found by him in mid-summer were refound in mid-winter, together with many more, amounting to nearly one hundred and fifty, of which eighteen were flowering plants, the other large classes being—mosses and hepaticæ, thirty-five; lichens, twenty-five; and algæ, fifty-one. These have all been described in the botany of the voyage (Flora Antarctica, 1847).

"The next visit of naturalists to Kerguelen Island was that of the Challenger Expedition in January and February 1874, when Mr Moseley collected most diligently, both in Christmas Harbour and on the coast sixty to seventy miles south-east of it. He found twenty-three flowering plants in all, including three European species (*Cerastium triviale*, *Poa pratensis*, and *Poa annua*), and three species not in the collections of the Antarctic Expedition—namely, two *Ranunculi* and an *Uncinia*. He also procured flowering specimens of the *Pringlea* and the *Lyallia*, and made large accessions to the cryptogamic flora, especially on the southern localities visited."

Subsequently, in the same year, and nearly contemporaneously, the naturalists attached to various expeditions which were stationed there to observe the transit of Venus, collected in Kerguelen, but they added, we believe, no novelties to the vascular plants.

Composition of the Flora.

The flora of Marion, the Crozets, Kerguelen and Heard Islands belongs wholly to that characteristic of the coldest regions where vascular plants exist in the southern hemisphere, and differs considerably from that of the Tristan da Cunha group and St Paul and Amsterdam Islands, at least as far as the vascular plants are concerned. It is usually termed Antarctic in contradistinction to Arctic, but it should be borne in mind that no vascular plants have been found within the Antarctic Circle, nor indeed within some degrees of it. Neither a tree nor a shrub exists, the nearest approach to the latter being the very dwarf, densely-tufted plants such as *Colobanthus*, *Lyallia*, and *Azorella*. Altogether only thirty species of vascular plants have been discovered in these islands. Of these twenty-

[1] *Phil. Trans. Roy. Soc. Lond.*, clxviii.

one are flowering plants, two are club-mosses, and seven are ferns. The extreme poverty of the flora is probably due to local causes rather than isolation, for the physical conditions are generally unfavourable to vegetation, as is exemplified in Heard Island, especially, where the species are individually poor in numbers.

Here follows a table of the vascular plants:—

Tabular View of the Distribution of the Vascular Plants of Marion Island, the Crozets, Kerguelen, and Heard Islands.

Name.	Marion.	Crozets.	Kerguelen.	Heard.	General Distribution.
Ranunculus biternatus, et var. crassifolius	×	...	×	...	Fuegia; Falklands; Tristan da Cunha ? Amsterdam Island.
Ranunculus trullifolius	...	...	×	...	Fuegia; Falklands.
Ranunculus moseleyi	...	...	×	...	Endemic.
Pringlea antiscorbutica	×	×	×	×	Endemic.
Colobanthus kerguelensis	...	...	×	×	Endemic.
Lyallia kerguelensis	...	...	×	...	Endemic.
Montia fontana	×	...	×	...	Generally diffused.
Acæna adscendens	×	×	×	...	New Zealand; Macquarie Island; Fuegia; Falklands.
Callitriche verna	×	...	×	×	Widely diffused.
Tillæa moschata	×	...	×	...	New Zealand; Lord Auckland and Campbell Is.; Falklands; Fuegia.
Azorella selago	×	×	×	×	Fuegia; Macquarie Island.
Galium antarcticum	...	×	×	...	Fuegia; Falklands.
Cotula plumosa	...	×	×	...	Lord Auckland, Campbell, and Macquarie Islands.
Limosella aquatica	...	...	×	...	Fuegia; New Zealand, and very widely dispersed.
Juncus scheuchzerioides	...	...	×	...	Fuegia; Falklands; Lord Auckland and Campbell Islands.
Uncinia compacta	...	...	×	...	Tasmania; New Zealand.
Deschampsia antarctica	...	...	×	...	Fuegia; Falkland Islands; Shetlands.
Agrostis magellanica	...	...	×	...	Chili; Fuegia; Falklands; Campbell Islands.
Poa cookii	×	...	×	×	Endemic.
Festuca erecta	...	...	×	...	Fuegia; Falklands.
Festuca kerguelensis	...	...	×	...	Endemic.
Lycopodium saururus	×	...	×	...	Widely dispersed in South America, and occurring in West and South Africa.
Lycopodium clavatum, var. magellanicum	×	...	×	...	Widely dispersed, including New Zealand and South America.
Hymenophyllum tunbridgense β. wilsoni	×	...	...	...	Very widely dispersed, including New Zealand.
Cystopteris fragilis	...	...	×	...	General in temperate regions, though wanting in many of the oceanic islands.
Lomaria alpina	×	×	×	...	All round the south temperate zone.
Asplenium obtusatum	...	×	...	...	All round the south temperate zone.
Aspidium mohrioides	×	...	...	...	California: Chili; Fuegia; Falklands; Amsterdam Island.
Polypodium vulgare, var.	...	...	×	...	North temperate zone; Hawaii; South Africa.
Polypodium australe	×	...	×	...	Generally diffused in the south temperate zone.
Totals	14	7	27	5	... ...

Out of a total of thirty vascular plants, six, or one-fifth, are endemic in these islands; seven are American and not found in New Zealand or any of the neighbouring islands, though two of them also occur in Amsterdam Island; two are found in New Zealand or the neighbouring islands, but not in South America or in any of the islands adjacent thereto; while fifteen are common to the American and New Zealand regions. The solitary species yet to be accounted for is *Polypodium vulgare*, the distribution of which is peculiar, and not specially American. It has a wide range in the north temperate zone, and also exists in the Sandwich Islands and South Africa, but we are not aware that it has been recorded from any other part of the southern hemisphere, except Kerguelen Island, and the form which occurs there is only known elsewhere from the Sandwich Islands. Numerically, then, there is a preponderance of Fuegian forms represented in Kerguelen and the other islands under consideration, as opposed to what may be termed New Zealand forms. The Antarctic flora may have spread from America; but with all the facts before us there does not seem to be a special affinity between the floras of Kerguelen, &c., and Fuegia, as distinguished from the flora of the zone generally. Taking the New Zealand flora as a whole, and the Fuegian flora as a whole, the former is as strongly represented in these islands by the same and allied species as the latter, indicating a former flora of the same elements spread all round a southern zone, which included a part of New Zealand and the extreme south of America as well as the present isolated spots of dry land in the same latitudes. Assuming the correctness of this view, the former Antarctic flora resembled the present Arctic flora in being composed of the same elements throughout; though the survivors of that flora offer a larger endemic element in each region, which may be attributed to their long separation.

Excluding the two endemic genera in the above table, all the others are represented both in New Zealand and Fuegia. On the other hand, the endemic species exhibit, perhaps, a closer affinity with Fuegian than with New Zealand species. The endemic genus *Pringlea* is more nearly related to the northern *Cochlearia* than to any southern genus; while *Lyallia* is allied to the Andean *Pycnophyllum*. Of course the existence of a former continuous Antarctic flora, composed of essentially the same elements throughout its whole area, does not exclude the possibility of that flora having been derived from the Andean region; yet the contrary may have been the case so far as the Antarctic element in the latter is concerned. The eminently Antarctic genera *Colobanthus*, *Acæna*, and *Uncinia* extend northward through the Andes to Mexico, yet they are not entirely restricted to the Andes and the Antarctic regions, or even to the countries nearest to them. Thus *Uncinia*, independently of the doubtful *Uncinia microglochin* (syn. *Carex microglochin*), is represented in the Sandwich Islands, and *Acæna* in Polynesia, as well as in South Africa. In a restricted sense *Azorella* is only American and Antarctic; but since Sir Joseph Hooker published his later analysis of the flora of Kerguelen, *Azorella selago* has been collected in Macquarie Island, which we regard as being within the New Zealand region. Still the New

Zealand species of *Azorella*, formerly regarded as constituting an independent genus (*Pozoa*), differ in habit rather than structure from the typical *Azorella*. Much more might be said in elucidation of this subject, but we must leave it here. The exploration of the lofty mountains of New Guinea may be expected to throw some light on the former distribution of southern types of vegetation. As an illustration of the southern type extending northward in both hemispheres the genus *Nertera* may be mentioned. In the Tristan da Cunha group, besides an endemic species, the very widely-dispersed *Nertera depressa* occurs. This species is common in New Zealand and some of the neighbouring islands, and South Australia, as well as in America, from Fuegia through the Andes to Mexico, and also in some of the Pacific Islands. In New Zealand there are three other species of the genus, two of which are endemic, and the third "appears to be also a Philippine Island plant." There is one endemic Australian species, and two or three occur in the mountains of Java and other islands of the Indian Archipelago, one of them being closely allied to *Nertera depressa*.

In conclusion, allusion may be made to the affinities of the flora of Marion, the Crozets, Kerguelen and Heard Islands on the one hand, with that of the Tristan da Cunha group and the islands of Amsterdam and St Paul on the other hand. Only two of the flowering plants are common to the northern and southern groups of islands, namely, *Ranunculus biternatus* and *Uncinia compacta;* and the genus *Acæna* is represented by different species in these two latitudinal regions. Altogether, the vegetation of the northern group of islands is of a type characteristic of a warmer climate, comprising American, New Zealand, and African elements, associated with a proportionately large endemic one.

ENUMERATION OF THE PLANTS.

PHANEROGAMÆ.

CRUCIFERÆ.

Pringlea antiscorbutica, R. Br.

Pringlea antiscorbutica, R. Br. in Hook. f., Fl. Antarct., p. 239 t. 90; Oliver in Journ. Linn. Soc. Lond., xiv. p. 389.

HEARD ISLAND. *Moseley.*

Kerguelen, Crozets, and Marion Islands.

The Heard Island form is a very dwarf, though stout one, owing, doubtless, to a less fertile soil.

CARYOPHYLLEÆ.

Colobanthus kerguelensis, Hook. f.

Colobanthus kerguelensis, Hook. f., Fl. Antarct., p. 249 t. 92, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 19; Oliver in Journ. Linn. Soc. Lond., xiv. p. 389.

HEARD ISLAND. *Moseley.*

Elsewhere only known from Kerguelen Island.

HALORAGEÆ.

Callitriche verna, Linn., subsp. *obtusangula*, Hook. f.

Callitriche verna, Linn., subsp. *obtusangula*, Hook. f. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 20.
Callitriche obtusangula, Le Gall.; Hegelm., Monogr. Callitr., p. 54.
Callitriche verna, Linn., Sp. Pl., ed. 2, p. 6; Hook. f., Fl. Antarct., p. 272.
Callitriche antarctica, Engelm.; Oliver in Journ. Linn. Soc. Lond., xiv. p. 389.

HEARD ISLAND. *Moseley.*

Very widely dispersed in the temperate regions of both hemispheres.

UMBELLIFERÆ.

Azorella selago, Hook. f.

Azorella selago, Hook. f., Fl. Antarct., p. 284, t. 99; Oliver in Journ. Linn. Soc. Lond., xiv. p. 389.

HEARD ISLAND. *Moseley.*

In many of the islets from Cape Horn eastward to Macquarie Island.

GRAMINEÆ.

Poa cookii, Hook. f.

Poa cookii, Hook. f. in Phil. Trans. Roy. Soc. Lond., clxviii. p. 22.
Festuca cookii, Hook. f. Fl. Antarct., p. 382, t. 139; Oliver in Journ. Linn. Soc. Lond., xiv. p. 389 (varietas).

HEARD ISLAND. *Moseley.*

The typical plant is found in Kerguelen and Marion Islands.

[*Agrostis magellanica* (*Agrostis antarctica*) is recorded from Heard Island in the Botany of Kerguelen Island, p. 21, but this is an error.]

CRYPTOGAMÆ.

MUSCI.

Ceratodon purpureus, Brid.

Ceratodon purpureus, Brid.; Hook. f. Fl. Antarct., p. 131; Mitt. in Journ. Linn. Soc. Lond., xv. p. 73.

HEARD ISLAND.—In a small, starved, and blackened state, barren—*Moseley.*

One of the most generally diffused of all mosses.

Grimmia (Schistidium) insularis, Mitt. (Plate LIII.)

Grimmia (*Schistidium*) *insularis*, Mitt. in Journ. Linn Soc. Lond., xv. p. 73.

Monoica. Pulvinato-cæspitosa. Folia patentia, siccitate subfalcatim curvata, lanceolata, subulato-angustata, superne carinata, integerrima, nervo crassiusculo percursa, cellulis superioribus rotundis obscuris, basalibus ad nervum angustis elongatis, ad angulos oblongis rectangulis hyalinis; perichætialia erecta, convoluta, ovali-elliptica, acuminata, cellulis basalibus oblongis angulatis, superioribus parvis oblongis rotundisque intermixtis. Theca immersa, subrotunda, ore amplo, operculo conico-acuminato, peristomio dentibus brevioribus.

HEARD ISLAND. *Moseley.*

Grimmiæ maritimæ statura habituque simillima sed foliis apice angustiore acuminatis et basi cellulis diversiformibus areolatis margine nullibi recurvis.

Bartramia robusta, Hook. f. et Wils.

Bartramia robusta, Hook. f. et Wils. Fl. Antarct., p. 133, t. 59, fig. 4; Mitt. in Journ. Linn. Soc. Lond., xv. p. 73.

HEARD ISLAND.—A small state of what appears to be this species is intermixed with *Ceratodon purpureus*—*Moseley.*

Also in Lord Auckland and Campbell Islands.

HEPATICÆ.

Fossombronia australis, Mitt.

Fossombronia australis, Mitt. in Journ. Linn. Soc. Lond., xv. p. 73, et in Phil. Trans. Roy. Soc. Lond., clxviii. p. 45.

Heard Island. *Moseley.*

Also in Kerguelen Island.

Barren specimens, but they appear to be the same as fertile plants from New Zealand and Tasmania. With the habit and appearance of the European *Fossombronia pusilla*, they have the size of *Fossombronia angulosa*, Raddi.

ALGÆ.

MELANOSPERMEÆ.

Fucaceæ.

Scytothalia obscura, Dickie.

Scytothalia obscura, Dickie in Journ. Linn. Soc. Lond., xv. p. 47.

Frondibus e radice callosa, inferne simplicibus, superne decomposito-pinnatus; phyllodiis linearibus, apicibus indivisis bel bifidis, acutis; receptaculis ?

A solitary specimen, having several fronds from a scutate root, agreeing in structure and general habit with the genus *Scytothalia*. What seem to be immature receptacles are crowded on the margins and surface of the fronds.

Heard Island. *Moseley.*

Sporochnaceæ.

Desmarestia rossii, Hook. f. et Harv.

Desmarestia rossii, Hook. f. et Harv. in Hook. Lond. Journ. Bot., 1845, p. 249; Hook. f., Fl. Antarct., p. 161, t. 172, 173; Dickie in Journ. Linn. Soc. Lond., xv. p. 47.

Heard Island. *Moseley.*

Kerguelen Island; Patagonia; Falklands.

Laminariaceæ.

Lessonia nigrescens, Bory.

Lessonia nigrescens, Bory in Duperr. Voy. "Coquille," Bot. Crypt., p. 80, t. 5; Kütz., Sp. Alg., p. 581; Hook. f., Fl. Antarct., t. 167, 168; Dickie in Journ. Linn. Soc. Lond., xv. p. 47.

Heard Island. *Moseley.*

Falklands; Patagonia.

Lessonia ovata, Hook. f. et Harv.

Lessonia ovata, Hook. f. et Harv. in Hook. f. Fl. Antarct., ii. p. 459, tt. 167, 168, et 171; Kütz., Sp. Alg., p. 582; Dickie in Journ. Linn. Soc. Lond., xv. p. 47.

HEARD ISLAND. *Moseley.*

Falkland Islands; Patagonia.

RHODOSPERMEÆ.

LAURENCIACEÆ.

Delisea pulchra, Mont.

Delisea pulchra, Mont. ex Kütz., Sp. Alg., p. 770; Dickie in Journ. Linn. Soc. Lond., xv. p. 48.
Bowiesia pulchra, Grev., Syn. Alg., p. 57.

HEARD ISLAND. *Moseley.*

Kerguelen Island; West Australia; New South Wales; New Zealand.

SPHÆROCOCCOIDEÆ.

Botryoglossum platycarpum, Kütz.

Botryoglossum platycarpum, Kütz., Phyc. Gener., p. 446, et Sp. Alg., p. 881; Dickie in Journ. Linn. Soc. Lond., xv. p. 48.
Fucus platycarpus, Turn., Fuc., t. 144.

HEARD ISLAND. *Moseley.*

Cape of Good Hope; Falklands; Chili; California.

RHODYMENIACEÆ.

Plocanium hookeri, Harv.

Plocanium hookeri, Harv. in Hook. Lond. Journ. Bot., 1845, p. 257; Kütz., Sp. Alg., p. 886; Dickie in Journ. Linn. Soc. Lond., xv. p. 48.

HEARD ISLAND. *Moseley.*

Kerguelen Island.

CRYPTONEMIACEÆ.

Callophyllis elongata, Dickie.

Callophyllis elongata, n. sp.? Dickie in Journ. Linn. Soc. Lond., xv. p. 48.

Fronde elongata, parce dichotoma, segmentis linearibus, inferne angustata, prope basin angustissima, margine undulata.

Two specimens of a red-purple colour, without fructification, but having the characteristic structure of the genus.

HEARD ISLAND. *Moseley.*

AMSTERDAM AND ST PAUL ISLANDS.

INTRODUCTORY NOTES.

Position and Physical Conditions.

Amsterdam Island lies in about 37° 50′ S. latitude and 77° 30′ E. longitude, or nearly 5000 miles distant from the Tristan da Cunha group, and St Paul Island is about fifty miles south of it. They are of volcanic origin, and the former is much the larger, though barely six miles across. It is oblong in shape, and rises to a height of 2760 feet. St Paul Island is only about a quarter the size of Amsterdam, and of irregular, quadrangular form, with a circular submerged crater on the north-east side. The highest point of this island is about 840 feet. Formerly, as we are informed by Sir Joseph Hooker, the names of these two islands were reversed in the best charts; and the plants recorded in the Flora Antarctica from Amsterdam Island were really from St Paul Island, as well as those mentioned by Reichardt[1] as having been collected by Sir George Staunton.

Botanical History.

Labillardière,[2] who followed Cook in reversing the names of the two islands, recorded the existence, in 1792, of forests in Amsterdam Island, and the fact that at the very time they were passing these forests were in flames in various parts. No landing was effected; and it was not until 1873 that it was ascertained that the forests were composed of *Phylica nitida* (*Phylica arborea*), the same species which forms the sole arboreous vegetation in the Tristan da Cunha group, and which also inhabits Bourbon and Mauritius. The late Captain Goodenough, then Commodore on the Pacific station, landed from H.M.S. "Pearl" and brought away a specimen of what he affirmed, and what has since proved to be, the only kind of tree growing on the island, as well as a fragment of a fern. This specimen was sent to Sir Joseph Hooker, who thereupon drew up a brief account[3] of the

[1] *Verhandl. d. k. k. zool.-bot. Gesellsch. Wien*, xxi.

[2] Relation du Voyage à la Recherche de la Perouse, i. p. 111.

[3] See *Journ. Linn. Soc. Lond.*, xiv. p. 474.

botany of the two islands. This was based upon a small collection of plants, in the herbarium of the British Museum, from St Paul Island made by Sir George Staunton on Macartney's voyage in 1793, previously described by Reichardt in the place cited from a duplicate set in the Vienna Herbarium; a more extensive collection made by MacGillivray and Milne in 1853, and Reichardt's published enumeration of the plants collected in the same island in 1857 by the naturalists of the "Novara" Expedition. Only three plants were then known from Amsterdam Island—namely, the *Phylica*, and the fern plucked by Commodore Goodenough in 1873, and *Spartina arundinacea*, identified by the Austrians, who landed, but were unable to penetrate into the interior of the island. In 1873, a French expedition for the observation of the transit of Venus took up its station on Amsterdam Island, and the naturalists appear to have thoroughly explored the island, though only portions of the botany have yet been published. But a set of the plants collected by them having been communicated to the Kew Herbarium, we have included them in the following enumeration. It is possible that this set was not a full one; and if this be the case, our list is incomplete. From the notes accompanying the plants collected by the French naturalists, it would appear that the *Phylica* is not so abundant as in the time of Labillardière and Staunton. In Macartney's Embassy to China, i. p. 226, we find the following passage:—"St Paul's [now called Amsterdam], or the island lying in sight, and to the northward of Amsterdam [now called St Paul's], differed in appearance materially from the latter. . . . It was overspread with shrubs and trees of middling size." The French note that it formed small woods in 1873. It is noteworthy that this tree does not occur in St Paul Island, though it is so near Amsterdam, and covered all over, as Sir G. Staunton states, with a fine mould—that is, humus. *Spartina arundinacea* covers broad tracts in Amsterdam, growing in thickets as impenetrable as the densest virgin forests. In St Paul Island it is scattered, and not very abundant. Curiously enough, in a note on the vegetation of Amsterdam Island, Mr Velain does not mention *Spartina*; yet he states that *Scirpus nodosus* grows to the height of a man, and so close together that it is very tiring to push through it.[1] We suspect a slip of the pen here.

Composition of the Vegetation.

A comparison of the table given below with that exhibiting the flora of Tristan da Cunha, reveals strong points of resemblance not shared by Kerguelen and the other islands in higher latitudes, although the latter are nearer to Tristan and Amsterdam than these are to each other.

[1] Végétation du Globe, Grisebach et Tchihatchef, i. p. 819.

Tabular View of the Distribution of the Vascular Plants of the Islands of Amsterdam and St Paul.

Name.	Amsterdam.	St. Paul.	General Distribution.
Ranunculus biternatus	×	...	Fuegia, Falklands, Tristan da Cunha, Marion, and Kerguelen Islands.
Colobanthus diffusus	...	×	Endemic.
Phylica nitida	×	...	Tristan da Cunha group; Bourbon; Mauritius.
Acæna sanguisorbæ	×	...	Tasmania, New Zealand, Lord Auckland, Campbell, and Macquarie Islands, and Tristan da Cunha.
Apium australe	×	×	South temperate zone generally.
Calystegia sepium	×	...	Widely diffused in north and south temperate regions.
Plantago stauntoni	...	×	Endemic.
Plantago pentasperma	×	...	Endemic.
Juncus communis	×	×	Cosmopolitan.
Scirpus aucklandicus	×	...	New Zealand; Lord Auckland and Campbell Islands.
Scirpus atropurpureo-vaginatus	×	...	Endemic.
Scirpus nodosus	×	×	South temperate and subtropical regions.
Uncinia brevicaulis var.	×	×	Tristan da Cunha group.
Uncinia compacta	×	×	Kerguelen; New Zealand; Tasmania; Australia.
Spartina arundinacea	×	×	Tristan da Cunha group.
Trisetum insulare	...	×	Endemic.
Agrostis delislei	×	...	Endemic.
Agrostis difficilis	×	...	Endemic.
Poa novaræ	×	×	Endemic.
Lycopodium trichiatum	×	...	Tropical America; Bourbon.
Lycopodium cernuum	...	×	Widely diffused in warm countries.
Lycopodium saururus	×	...	South America, common, and in South and West Africa.
Gleichenia polypodioides	×	...	South Africa, common.
Hymenophyllum obtusum	×	...	Polynesia; South Africa.
Hymenophyllum tunbridgense	×	...	Very widely spread.
Trichomanes saxifragoides	×	...	Japan; Ceylon; Java; Borneo; New Guinea; Polynesia.
Lomaria alpina	×	×	All round the south temperate zone.
Blechnum australe	×	×	South Africa; Tristan da Cunha; Mascarene Islands; Ascension?
Asplenium furcatum	×	...	Widely diffused in warm countries.
Nephrodium villosum	...	×	Throughout Tropical America.
Nephrodium aquilinum	×	...	Tristan da Cunha group.
Nephrodium filix-mas	×	×	Widely dispersed, though not in extra-tropical South America, Australia, or New Zealand.
Aspidium coriaceum	×	...	Widely diffused in the southern hemisphere.
Aspidium mohrioides	×	...	California; Chili; Fuegia; Falklands; Marion Island.
Polypodium australe	×	...	Generally diffused in the south temperate zone.
Polypodium serrulatum[1]	×	...	Generally diffused in the tropics, and extending into subtropical regions.
Acrostichum succisæfolium	×	...	Tristan da Cunha group.
Monogramme graminea[1]	×	...	South Africa, and Mascarene Islands.
Totals	33	15	... ...

An analysis of the foregoing table brings out some remarkable features in the flora of these two islands. Altogether, thirty eight vascular plants are known to exist, and these

[1] As explained further on, it is a little doubtful whether these two ferns were collected in Amsterdam Island.

consist of equal numbers of phanerogams and cryptogams. In Amsterdam, thirty-three species have been collected, whereof seventeen are cryptogams and sixteen phanerogams; and of fifteen from St Paul, five are cryptogams. Nine of the flowering plants are endemic, whereas not one of the ferns or club-mosses is peculiar to these islands. Out of the nine endemic species, three—*Colobanthus diffusus*, *Plantago stauntoni*, and *Trisetum insulare*, are only known from St Paul Island; four—*Plantago pentasperma*, *Scirpus atropurpureo-vaginatus*, *Agrostis delislei*, and *Agrostis difficilis*, are only recorded from Amsterdam; and two—*Uncinia brevicaulis* and *Poa novaræ*, occur in both islands. The *Scirpus* should perhaps not rank higher than a variety of *Scirpus nodosus*. Of the ten remaining flowering plants, only one, *Ranunculus biternatus*, is American, and not New Zealand, whereas three are New Zealand plants, but not American. Two are generally diffused in the south temperate zone, and one is much more widely distributed. The other two, *Phylica nitida* and *Spartina arundinacea*, which are characteristic plants, the former of Amsterdam only, and the latter of both islands, both occur and predominate in the Tristan da Cunha group; the former likewise inhabits Bourbon and Mauritius, while the latter is apparently restricted to Tristan da Cunha and these islands. Among the ferns are two similarly limited in their distribution, while several are African or Mascarene,[1] and not American. Only two are specially American, and the rest have a wide range.

The vegetation is clearly of composite origin, and the remarks on this point in the preceding account of the flora of Tristan are equally applicable here.

A few introduced plants have more or less established themselves in Amsterdam and St Paul Islands. They are:—*Stellaria media*, *Daucus carota*, *Sonchus oleraceus*, *Sonchus arvensis*, *Rumex acetosa*, *Poa annua*, *Polypogon monspeliensis*, *Panicum sanguinale*, *Holcus lanatus*, and *Holcus mollis*.

Sonchus oleraceus had become so common that MacGillivray and Milne thought it might be indigenous.

[1] We suspect the correctness of the record of two or three of these species for reasons given under the species in question in the following catalogue.

ENUMERATION OF THE PLANTS.

PHANEROGAMÆ.—DICOTYLEDONES.

RANUNCULACEÆ.

Ranunculus biternatus, Sm.

Ranunculus biternatus, Sm. in Rees' Cycl.; DC., Prodr., i. p. 30; Hook., Ic. Pl., t. 497; Hook. f., Fl. Antarct., p. 224.

Amsterdam Island.—Among *Sphagnum* at an altitude of about 2000 feet—*De l'Isle*, 42.

Fuegia; Falklands; Tristan da Cunha? Marion and Kerguelen Islands.

CARYOPHYLLEÆ.

Colobanthus diffusus, Hook. f.

Colobanthus diffusus, Hook. f., Fl. Antarct., p. 249, et in Journ. Linn. Soc. Lond., xiv. p. 477.
Sagina hochstetteri, Reichardt in Verhandl. d. k. k. zool.-bot. Gesellsch. Wien, xxi. Abhandl. p. 34.

St Paul Island. *Sir G. Staunton; Lieut. J. A. Smith; Hochstetter.*

There is no doubt that Hooker and Reichardt have described the same plant; but from the very imperfect specimens in Kew Herbarium, we are unable to decide whether it be a *Colobanthus* or a *Sagina*. Reichardt seems to have had better specimens, and he describes petals, which no true *Colobanthus* possesses, we believe. On the other hand, the valves of the capsule are described in the Flora Antarctica as opposite the perianth segments—a character of *Colobanthus*.

RHAMNEÆ.

Phylica nitida, Lam.

Phylica nitida, Lam., Encycl. Bot., ii. p. 77, n. 2613; DC., Prodr., ii. p. 35, excl. *β eriophora*.
Phylica arborea, Thouars, Esquisse Fl. Trist., p. 45; Hook. f. in Journ. Linn. Soc. Lond., xiv. p. 475; Vélain in Comptes rendus, lxxx. (1875), p. 1000.

Amsterdam Island.—Forming small woods—*Goodenough; De l'Isle*, 16.

Tristan da Cunha; Bourbon; Mauritius.

For further particulars concerning this tree see *ante*, p. 148.

ROSACEÆ.

Acæna sanguisorbæ, Vahl.

Acæna sanguisorbæ, Vahl, Enum., i. p. 294; Hook. f., Handb. Fl. N. Zeal., p. 56.

Amsterdam Island.—Beginning at an altitude of about 400 feet, where only a few plants are seen; but it ascends to the summit, becoming commoner in the higher parts—*De l'Isle.*

Common in New Zealand and Tasmania; also occurring in Lord Auckland's group, and Campbell and Macquarie Islands, as well as in the Tristan da Cunha group. In Marion and Kerguelen Islands it is represented by the allied *Acæna adscendens.*

UMBELLIFERÆ.

Apium australe, Thouars.

Apium australe, Thouars, Esquisse Fl. Trist., p. 43; Benth., Fl. Austr., iii. p. 372; Hook. f., Handb. Fl. N. Zeal., p. 90.

St Paul.—On the low sands, and in a stunted condition on the summit of the mountain—*Milne and MacGillivray; Smith.*

Amsterdam Island.—Only in humid places on the sea-shore—*De l'Isle*, 45.

South temperate zone.

The Amsterdam plant is much slenderer than our other insular specimens, though not so slender as some of the New Zealand and Australian forms.

Among the plants collected by Sir G. Staunton in St Paul Island is a fragment which Sir J. D. Hooker doubtingly referred to the genus *Azorella;* nothing, however, of this affinity was collected by MacGillivray and Milne, or by the naturalists of the French expedition.

CONVOLVULACEÆ.

Calystegia sepium, R. Br.

Calystegia sepium, R. Br., Prodr. Fl. Nov. Holl., p. 483; Hook. f., Handb. Fl. N. Zeal., p. 197.
Convolvulus sepium, Linn., Sp. Pl., ed. 1, p. 153.

St Paul Island.—Abundant about fifty yards from the margin of the basin—*Milne.*

Widely diffused in the temperate zones of both hemispheres. This does not appear to have been collected by either the French or the Austrian expeditions.

PLANTAGINEÆ.

Plantago stauntoni, Reichardt. (Plates XLI., XLII.—A.)

Plantago stauntoni, Reichardt in Verhandl. d. k. k. zool.-bot. Gesellsch. Wien, xxi. Abhandl. pp. 8 et 33.

St Paul Island.—All over the island—*MacGillivray and Milne;* growing in the elevated parts of the island—*De l'Isle;* without any observations—*Lieut. Smith.*

Although our plants do not agree in every particular with Reichardt's description of *Plantago stauntoni*, we have no doubt of their being that species. Reichardt describes the capsule as 4-seeded; but he probably overlooked the solitary apical seed, which we found in every one of the capsules opened, and also in the ovular state in our *Plantago pentasperma*.

With regard to dimorphism in the flowers of this species, Reichardt makes no allusion to it, and it is possible that what we have taken for a form having the tube of the corolla much shorter than the lobes is only a young state of the form represented in Plate XLI.

Plantago pentasperma, Hemsl. (Plate XLII.—B. and C.)

Plantago pentasperma, Hemsl., n. sp.

Herba annua? acaulis, villosa, glabrescens. *Folia* lineari-oblonga vel subspathulata, semi- ad sesquipollicaria, obtusa, deorsum attenuata, crassiuscula, enervia. *Scapi* erecti, graciles, supra medium floriferi, bracteis quam flores longioribus vel brevioribus. *Flores* dioici? dimorphi, aliis corollæ tubo quam lobi breviore et staminibus inclusis, aliis corollæ tubo quam lobi longiore et staminibus exsertis. *Capsula* pseudo-trilocularis, sæpissime 5-sperma; semina dimorpha, 2 collateralia oblonga in utroque latere septi, et 1 subhemisphericum in apice septi.

Amsterdam Island.—Not found in the lower parts of the island: commencing at an altitude of about 500 feet, and ascending nearly to the summit—*De l'Isle*.

The flowers of *Plantago pentasperma* are apparently dimorphic; whether they be functionally unisexual, or the one form unisexual and the other hermaphrodite, the material is insufficient to determine. In the one form the tube of the corolla is much longer than in the lobes, and the stamens apparently exserted, though we have not actually seen anthers; in the other, the tube is much shorter than the lobes, and the stamens apparently included. We say apparently included, because the two or three flowers we have been able to examine were young, and it is possible that in an older state the filaments would be much longer and the anthers exserted. It is more likely, however, that the corolla of this form, as in analogous forms of some northern species, never fully opens, and the stamens remain enclosed. The pistil of this form seemed to be perfect, but the one ovary examined was very small, and no ovules were detected. The specimens of the form having long-tubed corollas bear nearly ripe capsules, and the form of the septum or placenta—for it is more like an irregularly shaped placenta than a true septum—is very singular. It was not possible to determine with certainty whether the body bearing the seeds was attached anywhere except at the base. When the seeds are ripe the placenta detaches with the operculum, with which it may, or may not, have organic union. This placenta or septum is so formed that it divides the lower two-thirds of the capsule into two cells, and leaves the upper third one-celled. In each of the lower cells there are two oblong seeds covering the whole face

of the placenta or septum, and filling the cavity; while in the upper cell is a solitary seed of irregular, nearly hemispherical shape, more or less embedded in the top of the placenta. It is quite separated from the others, and, unlike them, it cannot fall out before the operculum itself becomes detached from the placenta.

PHANEROGAMÆ.—MONOCOTYLEDONES.

JUNCACEÆ.

Juncus communis, E. Mey.

Juncus communis, E. Mey., Syn. Junc., p. 12; Benth., Fl. Austr., vii. p. 128; Hook. f., Handb. Fl. N. Zeal., p. 290.
Juncus effusus et *conglomeratus*; Linn., Sp. Pl., ed. i. p. 326.

Amsterdam Island. *De l'Isle.* St Paul Island.—Abundant all over the island—*Milne.*

Almost everywhere in temperate regions, though wanting in most oceanic islands.

CYPERACEÆ.

Scirpus aucklandicus, Bœckl.

Scirpus aucklandicus, Bœckl. in Linnæa, xxxvi. p. 491.
Isolepis aucklandica, Hook. f., Fl. Antarct., i. p. 88, t. 50, et Handb. Fl. N. Zeal., p. 302.

Amsterdam Island.—Beginning at an elevation of about 750 feet—*De l'Isle*, 31.

New Zealand; Lord Auckland and Campbell Islands.

Scirpus atropurpureo-vaginatus, Bœckl.

Scirpus atropurpureo-vaginatus, Bœckl. in Flora, 1882, p. 14.

Amsterdam Island. *Vélain.*

We have not seen this, but from the description we think it is a variety of *Scirpus nodosus.*

Scirpus nodosus, Rottb.

Scirpus nodosus, Rottb., Descr. et Ic. Pl., p. 52, t. 8, fig. 3; Benth., Fl. Austr., vii. p. 331.

St. Paul Island. *Milne* and *MacGillivray; De l'Lisle*, 9. Amsterdam Island. *Vélain.*

Generally dispersed in the south temperate zones, and extending in some places into subtropical regions, and one of the most abundant plants in the island of Amsterdam, growing sometimes as tall as a man, according to Vélain,[1] and in such dense thickets as to

[1] Comptes rendus, lxxx., 1875, p. 1000.

be a great obstacle to travelling. Mr Vélain states that there is a belt of this plant around the mountain, commencing at an elevation of about 100 feet, and extending to nearly 900 feet; and it took him and his companions more than a day to traverse it.

Uncinia brevicaulis, Thouars, var. *robustior*. (Plate XLV.)

Uncinia brevicaulis, Thouars, var. *robustior*, Hemsl.
Uncinia rigida, Bœckl. in Flora, 1882, p. 64?
Uncinia gracilis, Thouars, β. *gracilis* [sic.], C. B. Clarke in Journ. Linn. Soc. Lond., xx. p. 400. $\frac{3}{4}$

St Paul and Amsterdam. *De l'Isle*, 7 and 44.

Also in Tristan da Cunha.

De l'Isle collected the plant figured in Amsterdam Island at an elevation of above 600 feet; and he collected a smaller specimen on the south coast of St Paul. For particulars of it see *ante*, p. 159.

Uncinia compacta, R. Br.

Uncinia compacta, R. Br., Prodr. Fl. Nov. Holl., p. 241; Hook. f., Fl. Tasm., ii. p. 103, t. 153; C. B. Clarke in Journ. Linn. Soc. Lond., xx. p. 394.

St Paul Island.—Beginning at an altitude of about 650 feet—*De l'Isle*, 34.

Kerguelen Island; New Zealand; Tasmania; Alps of Victoria, Australia.

Var. δ *elongata*, C. B. Clarke in Journ. Linn. Soc. Lond., xx. p. 395.

Amsterdam Island. *De l'Isle*, 55.

GRAMINEÆ.

Spartina arundinacea, Carmich.

Spartina arundinacea, Carmich. in Trans. Linn. Soc. Lond., xii. p. 504; Kunth, Enum., i. p. 279; Reichardt in Verhandl. d. k. k. zool.-bot. Gesellsch. Wien, xxi., Abhandl. p. 31.
Ponceletia arundinacea, Thouars, Esquisse Fl. Trist., p. 36.

St Paul Island.—Abundant on the bank around the basin—*Milne*; scattered, and not very common—*Jelinck*; common—*De l'Isle*. Amsterdam Island.—Exceedingly abundant.

Apparently restricted to these islands and the Tristan da Cunha group. There is an allied species on the eastern coast of South America.

Trisetum insulare, Hemsl. (Plate LII.)

Trisetum insulare, Hemsl., n. sp.
Danthonia radicans, Steudel (?) Reichardt in Verhandl. d. k. k. zool.-bot. Gesellsch. Wien, xxi., Abhandl. p. 31.

Cæspitosum, foliis brevibus confertis late vaginantibus, paniculis densis abbreviatis, spiculis bifloris, gluma florenti longe bisetosa cum arista inter setas terminali.

Perenne, stoloniferum, undique glabra, stolonibus brevibus. *Culmi* adscendentes, graciliusculi, 9–18 poll. longi, supra paucifoliati. *Folia* tenuia, lævia vel margine leviter scabrida, plana, basi latiuscula (2–2½ lineas), acutissima, absque-vagina 1–3 poll. longa, in loco ligulæ ciliolata. *Paniculæ* compactæ, 1½–3 poll. longæ, ¾–1½ poll. latæ, longiuscule pedunculatæ; spiculæ breviter graciliterque pedicellatæ, 2-floræ, cum aristis 7–8 lineas longæ. *Flores* hermaphroditi, basi pilosuli; glumæ scariosæ, uninerviæ, 2 exteriores lanceolatæ, longe acuminatæ vel pseudoaristatæ, carinatæ, secus carinam leviter scabridæ; gluma florens absque aristis exsertis duplo brevior, apice triaristata, vel bisetosa cum arista inter setas terminalis, arista propria torta, geniculata, setas laterales triplo superans; palea angustissima glumam æquans; stamina 3. *Caryopsis* libera, anguste oblonga, glabra.

St Paul.—Endemic. Frequent in the low grounds, rare on the summit—*MacGillivray* and *Milne;* without locality—*Lieut. A. J. Smith;* the earliest flowering plant in the island—*De l'Isle*, 1.

We suspect this is the plant referred to by Reichardt under the above name, though it is perfectly distinct from the typical plant in Kew Herbarium. We have placed it in the genus *Trisetum* in spite of its having a terminal instead of a dorsal awn, because we believe that *Danthonia* must eventually be reduced to the former genus. Among plants in the two genera there exists every gradation from a strictly dorsal awn to a terminal one, as in our plant, between the two lateral setæ. *Trisetum insulare* is most nearly allied to the South African *Danthonia papillosa*, Trin., which, however, is a very hairy plant. *Aira pictigluma*, Steud., now referred to *Trisetum*, is a very similar plant from the mountains of Tropical Africa. There are two flowered species with a dorsal awn, and there are two flowered species with a terminal awn in both genera; and as the genera have been limited, one finds the same range of variation and parallel forms in the two.

Agrostis difficilis, Hemsl. (Plate XLIII.)

Agrostis difficilis, Hemsl., n. sp.

Cæspitosus, erectus, glaber, lævis, foliis teniusculis planis, spiculis minutis, glumis muticis exterioribus fere æqualibus.

Perennis, 1½–2 pedalis, culmis graciliusculis. *Folia* radicalia non visa, caulina acuta, 3–6 poll. longa, ligula ampla, integra, rotundata. *Paniculæ* graciles, angustæ, pedicellis parcissime et minutissime puberulis. *Glumæ* glabræ, vel exteriores pilis paucissimis secus carinam instructæ, acutæ; florens paulo brevior, obtusa, integra; palea obtusa; stamina 3. *Caryopsis* matura non visa.

Amsterdam Island.—Endemic. Rather common in humid parts of the low ground —*De l'Isle*, 37.

This very ordinary-looking grass has given us great trouble, and may after all turn out to be some common species, though we have failed to match it. In many respects it is like *Agrostis vulgaris*, and still more in aspect like *Agrostis canina;* but the total absence of an awn on the flowering glume removes all doubt as to its not being the latter, and we cannot think it is a variety or state of the former.

Agrostis delislei, Hemsl. (Plate XLIV.)

Agrostis delislei, Hemsl., n. sp.

Cæspitosa, erecta, foliis brevibus margine scabridis, paniculis angustis, gluma florifera longe aristata basi extus barbata.

Perennis, 9–15 poll. alta, fere ubique glabra. *Folia* culmo multo breviora, crassiuscula sed vix coriacea, obtusiuscula, siccitate marginibus involuta; ligula ampla, integra, obtusa vel fere rotundata. *Paniculæ* subsessiles vel pedunculatæ, pedicellis pilis minutis rigidiusculis instructis. *Glumæ* exteriores subæquales, florenti duplo longiores, acutæ; gluma florens bifida, basi barbata, dorso longe aristata, arista recta; palea paulo brevior, oblonga; stamina 3, marcida. *Caryopsis* non visa.

Amsterdam Island.—Among *Sphagnum* at about 600 feet—*De l'Isle*, 33.

In structure this species approaches very near to *Agrostis media*, from Tristan da Cunha.

Poa novaræ, Reichardt.

Poa novaræ, Reichardt in Verhandl. d. k. k. zool.-bot. Gesellsch. Wien, xxi., Abhandl. p. 31.

St Paul Island.—Summit of the mountain—*Milne;* constituting the basis of the vegetation, especially in the interior of the crater—*De l'Isle*, 4. Amsterdam Island.—Maritime region up to where *Isolepis nodosa* begins—*Vélain.*

CRYPTOGAMÆ.—VASCULARES.

LYCOPODIACEÆ.

Lycopodium trichiatum, Bory.

Lycopodium trichiatum, Bory, Voy. Dans les Iles d'Afr., p. 350; Spring, Monogr. Lycopod., partie i., p. 91, et partie ii., p. 43; Fournier in Comptes rendus, 1875, lxxxi. p. 1141.

Amsterdam Island.—*De l'Isle.*

Also recorded from Tropical America and Bourbon.

We have not seen any *Lycopodium* from Amsterdam which could be referred to this species or variety, for *Lycopodium trichiatum* is regarded by many botanists as a variety of the widely spread *Lycopodium clavatum*, Linn. It is included here on the authority of

Fournier. The form from all the other islands is *Lycopodium clavatum*, Linn., var. *magellanicum*.

Lycopodium cernuum, Linn.

Lycopodium cernuum, Linn.; Spring, Monogr. Lycopod., partie i., p. 79, et partie ii., p. 37; Fournier in Comptes rendus, 1875, lxxxi., p. 1140; Reichardt in Verhandl. d. k. k. zool.-bot. Gesellsch. Wien, xxi., Abhandl. p. 30.

St Paul Island.—Near hot springs—*Milne; De l'Isle.*

Widely diffused in warm countries, including Ascension and St Helena, though not the Tristan da Cunha group.

Milne (MSS. in Kew Library) states that this grew in soil at a temperature of 114° Fahr.

Lycopodium saururus, Lam.

Lycopodium saururus, Lam., Encycl. Bot., iii. p. 653; Spring, Monogr. Lycopod., partie i., p. 21, et partie ii., p. 6.

Lycopodium insulare, Carmich. in Trans. Linn. Soc. Lond., xii. p. 509; Fournier in Comptes rendus, 1875, lxxxi. p. 1141.

Lycopodium axillare, Roxb. in Beatson's St. Helena Tracts, p. 312.

Amsterdam Island.—*De l'Isle.*

Widely dispersed in Africa and America, and occurring in most of the islets from Ascension to Kerguelen.

FILICES.

Gleichenia polypodioides, Sm.

Gleichenia polypodioides, Sm. in Act. Taur., v. p 419; Hook., Sp. Fil., i. p. 3; Schkuhr., Fil., t. 149; Hook. and Bak., Synop. Fil., p. 11; Kuhn, Fil. Afr., p. 167.

Gleichenia argentea, Kaulf., Enum. Fil., p. 36; Fournier in Comptes rendus, 1875, lxxxi. p. 1141.

Amsterdam Island.—Very abundant from an elevation of about 600 feet up to nearly 1650 feet—*De l'Isle.*

Previous to its discovery in Amsterdam Island, this fern was regarded as an endemic African species. It is one of the commoner ferns in South Africa, extending northward to Angola. Fournier records it from Australia, but among the copious specimens of this species at Kew there is none from that country. Indeed, there is not a single species of the subgenus *Eugleichenia* common to Australia and South Africa; and this subgenus is confined to the Old World, while the subgenus *Mertensia* is generally spread in warm countries, *Gleichenia* (*Mertensia*) *dichotoma* being almost universal. It is noteworthy that *Gleichenia polypodioides* is the only species of the genus represented in our insular floras from the Bermudas to Kerguelen Island. The Amsterdam specimens collected by De l'Isle have fronds from six to seven inches high.

Hymenophyllum obtusum, Hook. et Arn.

Hymenophyllum obtusum, Hook. et Arn., Bot. Beechy's Voyage, p. 109; Hook., Sp. Fil., i. p. 93.
Hymenophyllum capillare, Desv.; Fournier in Comptes rendus, 1875, lxxxi. p. 1140.

Amsterdam Island.—In clefts and caverns at 500 to 600 feet—*De l'Isle*, 25.

Polynesia; South Africa.

Fournier identifies the Amsterdam plant with *Hymenophyllum capillare*, Desv. (*Hymenophyllum lineare*, Swartz), while Baker, in Kew Herbarium, has written it up as *Hymenophyllum obtusum*. These species and the *Hymenophyllum æruginosum* of the Tristan da Cunha group are very closely allied, and pteridologists are not agreed as to their limits, as appears from Kuhn (Filices Africanæ, p. 38). See note under *Hymenophyllum æruginosum*, ante, p. 162. *Hymenophyllum obtusum* was founded on Hawaian specimens.

Hymenophyllum tunbridgense, Smith, *β. wilsoni*, Hook. and Bak.

Hymenophyllum tunbridgense, Smith, *β. wilsoni*, Hook. and Bak., Synop. Fil., p. 67.
Hymenophyllum meyeri, Presl, Hymen., p. 50; Fournier in Comptes rendus, 1875, lxxxi. p. 1140.

Amsterdam Island. *De l'Isle.*

The form of this widely spread fern found in Amsterdam is identified by Fournier with one which also occurs in South Africa, which, however, is not accorded even varietal rank by Hooker and Baker.

Trichomanes saxifragoides, Presl.

Trichomanes saxifragoides, Presl, Hymen., pp. 16 et 39; Van den Bosch, Synop. Hymen., reprint, p. 13; Hook. and Bak., Synop. Fil., p. 75; Fournier in Comptes rendus, 1875, lxxxi. p. 1140.

Amsterdam Island. *De l'Isle.*

Japan; Ceylon; Java; Borneo; New Guinea; Polynesia.

Lomaria alpina, Spreng.

Lomaria alpina, Spreng.; Hook. f., Fl. Antarct., ii. p. 393, t. 150; Hook. and Bak., Synop. Fil., p. 178; Mett. in Reise der "Novara," Bot., i. p. 209; Reichardt in Verhandl. d. k. k. zool.-bot. Gesellsch. Wien, xxi., Abhandl. p. 29.
Lomaria penna-marina, Mett. in Kuhn Fil. Afr., p. 92; Baker in Mart. Fl. Bras. Polypod., p. 414; Fournier in Comptes rendus, 1875, lxxxi. p. 1140.

Amsterdam Island.—From the lowlands to the summit—*De l'Isle*, 48. St Paul Island. *Milne; De l'Isle; Jelinek.*

All round the south temperate zone.

Blechnum australe, Linn.

Blechnum australe, Linn.; Hook. and Bak., Synop. Fil., p. 186; Fournier in Comptes rendus, 1875, lxxxi. p. 1140; Reichardt in Verhandl. d. k. k. zool.-bot. Gesellsch. Wien, xxi. Abhandl. p. 29.
Blechnum hastatum, Kaulf., Enum. Fil., p. 161.

Amsterdam Island. *De l'Isle.* St Paul Island. *De l'Isle*, 6; *Jelinek.*

Mascarene Islands; South Africa; Southern Islands, from Tristan da Cunha eastward to the present, and temperate South America. Perhaps also in Ascension.

The fern referred to by Sir Joseph Hooker (Journ. Linn. Soc. Lond., xiv. p. 477) as a species of *Lomaria* is probably *Blechnum australe*, but we have not been able to find the specimen. It was a fragment of a frond, without fructification, from a root torn up by Commodore Goodenough on the occasion of his hurried visit to Amsterdam Island, and forwarded with the *Phylica* to Kew by Wykeham Perry, Esq., R.N., of H.M.S. "Pearl," with the promise, that if the plant should put forth new fronds, he would communicate them. On the other hand, although the island has since been pretty thoroughly botanised, it is possible that *Lomaria boryana* may exist there.

Asplenium furcatum, Thunb.

Asplenium furcatum, Thunb., Prodr. Fl. Cap., p. 735; Hook. and Bak., Synop. Fil., p. 214; Fournier in Comptes rendus, 1875, lxxxi. p. 1140.

Amsterdam Island. *De l'Isle.*

Common and widely diffused in warm countries, including St Helena and South Trinidad.

Nephrodium villosum, Presl.

Nephrodium villosum, Presl; Hook., Sp. Fil., iv. p. 134, t. 264; Hook. and Bak., Synop. Fil. p. 286.
Phegopteris bivestita, Fournier in Comptes rendus, 1875, lxxxi. p. 1140, non Mett.

St Paul Island. *De l'Isle.*

A very common fern throughout Tropical America and the West Indies, and extending to the Galapagos, but not previously recorded from any other part of the world. We have cited the *Phegopteris bivestita* of Fournier's enumeration as a synonym of this, because a specimen in Kew Herbarium from St Paul Island, collected by De l'Isle, and named *Phegopteris bivestita*, is certainly not the plant described by Mettenius. Mr Baker is responsible for its being referred to *Nephrodium villosum*.

Nephrodium aquilinum, Hemsl. (Plate XXXIX.)

Nephrodium aquilinum, Hemsl., *ante*, p. 167.
Polypodium aquilinum, Thouars, Esquisse Fl. Trist., p. 32.
Phegopteris aquilina, Mett. in Kuhn Fil. Afr., p. 121; Fournier in Comptes rendus, 1875, lxxxi. p. 1140.

Amsterdam Island. *De l'Isle.*

This was not in the set of De l'Isle's plants sent to Kew, and we have only seen specimens from the Tristan da Cunha group; but we have no reason to doubt the correctness of Fournier's determination; and, if correct, it is one more link in the chain of evidence tending to prove the common origin of the vegetation of these distant islands.

Nephrodium (Lastrea) filix-mas, Rich.

Nephrodium (*Lastrea*) *filix-mas*, Rich. ex Desv. in Mém. Soc. Linn. Par., vi. p. 260; Hook., Sp. Fil., iv. p. 116; Hook., Fil. Exot., t. 98; Hook., Ic. Fil., t. 234; Hook. and Bak., Synop. Fil., p. 272.
Nephrodium (*Lastrea*) *antarcticum*, Baker in Journ. Linn. Soc. Lond., xiv. pp. 479 et 480.
Aspidium antarcticum, Fourn., et A. *dilatatum*, Fournier in Comptes rendus, 1875, lxxxi. p. 1140?
Aspidium oppositum, Kaulf., var. *indusio minuto*, Mett. in Reise der Novara, Bot., i. p. 218, et Reichardt in Verhandl. d. k. k. zool.-bot. Gesellsch. Wien, xxi., Abhandl. p. 30?

Amsterdam Island. *De l'Isle.* St Paul Island. *Sir G. Staunton;* in humid situations all over the island—*Jelinek.*

At Mr Baker's request we reduce his *Nephrodium antarcticum* founded on an imperfect specimen in the Herbarium of the British Museum collected by Sir G. Staunton. Since describing that he has had an opportunity of examining a specimen collected by De l'Isle, and sent to Kew from the Paris Herbarium under the name "*Aspidium dilatatum*, Swartz." He recognises it as a better specimen of the same species as his *Aspidium antarcticum*, and regards it as a variety of *Nephrodium filix-mas* with compound fronds similar to the var. *elongatum* of the Synopsis Filicum.

Nephrodium filix-mas is widely spread, and common in tropical and South Africa and the Mascarene Islands; yet it is noteworthy that it does not extend into extratropical South America, nor is it represented in Australia, New Zealand, or any of the other islands of the Southern Ocean.

Aspidium coriaceum, Swartz.

Aspidium coriaceum, Swartz, Prodr. Fl. Ind. Occ., p. 133, et Synop. Fil., p. 57; Hook. and Bak., Synop. Fil., p. 254.
Polystichum coriaceum, Schott in Presl Tent., p. 84; Fournier in Comptes rendus, 1875, lxxxi. p. 1140.

Amsterdam Island.—Abundant, fronds three feet high—*De l'Isle.*

Widely diffused in the southern hemisphere, chiefly in the extratropical regions.

Aspidium (Polystichum) mohrioides, Bory.

Aspidium (*Polystichum*) *mohrioides*, Bory in Duperr. Voy. Coquille, Bot. Crypt., p. 267, t. 35; Hook. f., Fl. Antarct., p. 392, t. 149; Hook., Sp. Fil., iv. p. 26; Hook. and Bak., Synop. Fil., p. 252.
Polystichum mohrioides, Presl, Tent., p. 83; Fournier in Comptes rendus, 1875, lxxxi. p. 1140.

Amsterdam Island.—Beginning at about 1400 feet, and ascending very little higher—*De l'Isle.*

California; Chili; Patagonia; Tierra del Fuego; Falkland Islands, and Marion Island.

Polypodium (Grammitis) australe, Mett.

Polypodium (*Grammitis*) *australe*, Mett., Polypod., p. 36; Hook., Sp. Fil., iv. p. 167; Hook. and Bak., Synop. Fil., p. 322.
Grammitis magellanica, Desv., Journ. Bot., iii. p. 275, t. 10, fig. 2; Fournier in Comptes rendus, 1875, lxxxi. p. 1140.

AMSTERDAM ISLAND. *De l'Isle.*

Generally diffused in the south temperate zone.

Polypodium serrulatum, Mett.

Polypodium serrulatum, Mett., Polypod., p. 32; Hook., Sp. Fil., iv. p. 174; Hook. and Bak., Synop. Fil., p. 323; Bak., Fl. Maurit., p. 504.
Micropteris serrulata, et *Micropteris orientalis*, Desv. in Mém. Soc. Linn. Par., vi. p. 217.
Xiphopteris serrulata, Kaulf., Enum. Fil., p. 85; Hook., Garden Ferns, t. 44.
Xiphopteris orientalis, Fournier in Comptes rendus, 1875, lxxxi. p. 1140.

AMSTERDAM ISLAND. *De l'Isle.*

Generally diffused in the tropics, and extending into subtropical regions.

This is another fern of which we have seen no specimen from Amsterdam Island, and of which there is a specimen in Kew Herbarium from Bourbon, collected by De l'Isle; hence we think it may have got into Fournier's list by mistake. The distribution of the species, as illustrated in the rich Herbarium at Kew, supports this view, inasmuch as it is not found in extratropical South Africa; and we have seen no specimens of it from extratropical America, unless we include Juan Fernandez. On the other hand, the extraordinary range of *Phylica nitida*, as set forth in our enumeration of the plants of the Tristan da Cunha group, indicates an ancient connection between the vegetation of the Mascarene Islands and that of these southern islands.

Acrostichum succisæfolium, Thouars.

Acrostichum succisæfolium, Thouars, Esquisse Fl. Trist., p. 30; Hook. and Bak., Synop. Fil., p. 408; Fournier in Comptes rendus, 1875, lxxxi. p. 1140.

AMSTERDAM ISLAND.—Abundant at 600 feet—*De l'Isle.*

Previously only known from the Tristan da Cunha group.

Monogramme graminea, Schkuhr.

Monogramme graminea, Schkuhr., Krypt. Gew., p. 82; Hook. and Bak., Synop. Fil., p. 375.
Monogramme linearis, Kaulf., Enum. Fil., p. 196; Fournier in Comptes rendus, 1875, lxxxi. p. 1140; Hook., Sp. Fil., v. p. 122.

AMSTERDAM ISLAND. *De l'Isle.*

Cape of Good Hope, and Mascarene Islands.

We have not seen specimens of this fern from Amsterdam Island; but in Kew Herbarium there are specimens from Bourbon, collected by De l'Isle, and it is possible that it may have been inadvertently placed in Fournier's list of the Amsterdam species.

CRYPTOGAMÆ.—CELLULARES.

MUSCI.[1]

Sphagnum lacteolum, Besch.

Sphagnum lacteolum, Besch. in Comptes rendus, lxxxi. p. 724 (reprint, p. 5).

AMSTERDAM ISLAND. *De l'Isle.*

Sphagnum reichardtii, Hampe.

Sphagnum reichardtii, Hampe.; Reise der Novara, Bot., i. p. 166; Besch. in Comptes rendus, lxxxi. p. 722 (reprint, p. 3).
Sphagnum acutifolium, Ehrh.; Mitt. in Journ. Linn. Soc. Lond., xiv. p. 482.

ST PAUL ISLAND. *De l'Isle.*

Funaria calvescens, Schwägr.

Funaria calvescens, Schwägr.; C. Müll., Synop. Musc. Frond., i. p. 107; Besch. in Comptes rendus, lxxxi. p. 724 (reprint, p. 5).
Funaria hygrometrica, Hedw., var. *calvescens*, Hook. f. et Wils.

AMSTERDAM ISLAND. *De l'Isle.*

Polytrichum formosum (?), Hedw.

Polytrichum formosum (?), Hedw.; Besch. in Comptes rendus, lxxxi. p. 724 (reprint, p. 5).

AMSTERDAM ISLAND. *De l'Isle.*

Bryum isleanum, Besch.

Bryum isleanum, Besch. in Comptes rendus, lxxxi. p. 724 (reprint, p. 5).

ST PAUL and AMSTERDAM ISLANDS. *De l'Isle.*

Webèra nutans, Hedw.

Webera nutans, Hedw.; Besch. in Comptes rendus, lxxxi. p. 722 (reprint, p. 3).
Bryum (*Webera*) *nutans*, Schreb., Fl. Lips., p. 81; Mitt. in Journ. Linn. Soc. Lond., xiv. p. 482.
Bryum laxum, Reichdt. in Reise der Novara, Bot., i. p. 176, t. 31.

ST PAUL and AMSTERDAM ISLANDS. *De l'Isle.*

Campylopus megalotus, Besch.

Campylopus megalotus, Besch. in Comptes rendus, lxxxi. p. 721 (reprint, p. 2).

ST PAUL ISLAND. *De l'Isle.*

[1] Chiefly from Bescherelle's enumeration of the species collected by the French expedition, Comptes rendus, lxxxi.

Campylopus clavatus, R. Br.

Campylopus clavatus, R. Br.; Hook. f., Handb. New Zealand Fl., p. 414; Schwægr., Suppl., t. 255; Mitt. in Journ. Linn. Soc. Lond., xiv. p. 481; Besch. in Comptes rendus, lxxxi. p. 721 (reprint, p. 2).
Campylopus flexuosus, Brid. ex Hook. f. in Fl. Antarct., p. 408?

St Paul Island. *Milne.*

Campylopus falcifolius, Mitt.

Campylopus falcifolius, Mitt. in Journ. Linn. Soc. Lond., xiv. p. 481; Besch. in Comptes rendus, lxxxi. p. 721 (reprint, p. 2).

St Paul Island. *Milne*, 23; *Strange*; *De l'Isle.*

Campylopus eximius, Reichdt.

Campylopus eximius, Reichdt. in Reise der Novara, Bot., i. p. 167, t. 28; Besch. in Comptes rendus, lxxxi. p. 721 (reprint, p. 2).
Campylopus introflexus, Mitt. in Journ. Linn. Soc. Lond., xiv. p. 481.
Dicranum introflexum, Hedw., Sp. Musc., t. 29.

St Paul Island. *Milne.*

Campylopus minor, Besch.

Campylopus minor, Besch. in Comptes rendus, lxxxi. p. 723 (reprint, p. 4).

Amsterdam Island. *De l'Isle.*

Campylopus cornatulus, Besch.

Campylopus cornatulus, Besch. in Comptes rendus, lxxxi. p. 723 (reprint, p. 4).

Amsterdam Island. *De l'Isle.*

Dicranum subconfine, Besch.

Dicranum subconfine, Besch. in Comptes rendus, lxxxi. p. 723 (reprint, p. 4).

Amsterdam Island. *De l'Isle.*

Dicranum fulvastrum, Besch.

Dicranum fulvastrum, Besch. in Comptes rendus, lxxxi. p. 723 (reprint, p. 4).

Amsterdam Island. *De l'Isle.*

Dicranella pyrrhotricha, Besch.

Dicranella pyrrhotricha, Besch. in Comptes rendus, lxxxi. p. 721 (reprint, p. 2).

St Paul Island. *De l'Isle.*

Trematodon setaceus, Hampe.

Trematodon setaceus, Hampe. MS.; Besch. in Comptes rendus, lxxxi. p. 721 (reprint, p. 2).

St Paul Island. *De l'Isle.*

Philonotis trichophylla, Besch.

Philonotis trichophylla, Besch. in Comptes rendus, lxxxi. p. 724 (reprint, p. 5).

Amsterdam Island. *De l'Isle.*

Syrrhopodon isleanus, Besch.

Syrrhopodon isleanus, Besch. in Comptes rendus, lxxxi. p. 722 (reprint, p. 3).

St Paul Island. *De l'Isle.*

Trichostomum (Leptodontium) interruptum, Besch.

Trichostomum (Leptodontium) interruptum, Besch. in Comptes rendus, lxxxi. p. 723 (reprint, p. 4).
Didymodom interruptus, Mitt. in Hook. f., Handb. Fl. N. Zeal., p. 421.

Amsterdam Island. *De l'Isle.*

Trichostomum (?) perangustum, Besch.

Trichostomum (?) perangustum, Besch. in Comptes rendus, lxxxi. p. 723 (reprint, p. 4).

Amsterdam Island. *De l'Isle.*

Barbula muralis, Hedw.

Barbula muralis, Hedw.; Reichdt. in Reise der Novara, Bot., i. p. 173; Besch. in Comptes rendus, lxxxi. p. 722 (reprint, p. 3).

St Paul Island. *Reichardt.*

Ceratodon calycinus, Hampe.

Ceratodon calycinus, Hampe.; Reichdt. in Reise der Novara, Bot., i. p. 172; Besch. in Comptes rendus, lxxxi. p. 72 (reprint, p. 3).
Ceratodon purpureus, Mitt. in Journ. Linn. Soc. Lond., xiv. p. 481.
Mnium purpureum, Linn., Sp. Pl., ed. 2, p. 1575.

St Paul Island. *De l'Isle.*

Racomitrium pruinosum, Besch.

Racomitrium pruinosum, Besch. in Comptes rendus, lxxxi. p. 723 (reprint, p. 4).
Racomitrium lanuginosum, C. Müll., Mittheilung, 1869.
Racomitrium lanuginosum, var. *pruinosum*, Hook. f. et Wils., Fl. N. Zeal., ii. p. 76, et Hook. f., Handb. Fl. N. Zeal., p. 427.

Amsterdam Island. *De l'Isle.*

Entodon pallidus, Mitt.

Entodon pallidus, Mitt. in Seem. Fl. Vit., p. 398; Besch. in Comptes rendus, lxxxi. p. 722 (reprint, p. 3).

St Paul Island. *Strange.*

Hypnum (Cupressina) compressulum, Besch.

Hypnum (*Cupressina*) *compressulum*, Besch. in Comptes rendus, lxxxi. p. 724 (reprint, p. 5).

Amsterdam Island. *De l'Isle.*

Rhaphidorrhynchum aurescens, Besch.

Rhaphidorrhynchum aurescens, Besch. in Comptes rendus, lxxxi. p. 724 (reprint, p. 5).

Amsterdam Island. *De l'Isle.*

Rhaphidorrhynchum (Trichosteleum) confertulum, Besch.

Rhaphidorrhynchum (*Trichosteleum*) *confertulum*, Besch. in Comptes rendus, lxxxi. p. 722 (reprint, p. 3).

St Paul Island. *De l'Isle.*

Rhaphidorrhynchum contiguum, Hook. f. et Wils.

Rhaphidorrhynchum contiguum, Hook. f. et. Wils.; Besch. in Comptes rendus, lxxxi. p. 722 (reprint, p. 3).

Sematophyllum contiguum, Mitt. in Seem. Fl. Vit., p. 398.

St Paul Island. *Strange.*

HEPATICÆ.

Anthoceros lævis, Linn.

Anthoceros lævis, Linn.; Reichdt. in Reise der Novara, Bot., i. p. 147; Verhandl. d. k. k. zool.-bot. Gesellsch. Wien, xxi., Abhandl. p. 28.

St Paul Island.

Marchantia polymorpha, Linn.

Marchantia polymorpha, Linn.; Reichdt. in Reise der Novara, Bot., i. p. 151; Verhandl. d. k. k. zool.-bot. Gesellsch. Wien, xxi. Abhandl. p. 28.

St Paul Island.

Lophocolea jelinekii, Reichdt.

Lophocolea jelinekii, Reichdt. in Verhandl. d. k. k. zool.-bot. Gesellsch. Wien, xvii. (1867), Abhandl. p. 959, et in Reise der Novara, Bot., i. p. 160.

St Paul Island.

Alicularia scalaris, Corda.

Alicularia scalaris, Corda; Reichdt. in Reise der Novara, Bot., i. p. 165; Verhandl. d. k. k. zool.-bot. Gesellsch. Wien, xxi., Abhandl. p. 28.

St Paul Island.

LICHENES.

Stereocaulon proximum, Nyl.

Stereocaulon proximum, Nyl. in Comptes rendus, lxxxi. p. 726 (reprint, p. 7).

Amsterdam Island. *De l'Isle.*

Parmelia præperlata, Nyl.

Parmelia præperlata, Nyl. in Comptes rendus, lxxxi. p. 725 (reprint, p. 6).

St Paul Island. *De l'Isle.*

Parmelia confluescens, Nyl.

Parmelia confluescens, Nyl. in Comptes rendus, lxxxi. p. 725 (reprint, p. 6).

St Paul Island. *De l'Isle.*

Peltigera dolichorhiza, Nyl.

Peltigera dolichorhiza, Nyl. in Comptes rendus, lxxxi. p. 726 (reprint, p. 7).

Amsterdam Island. *De l'Isle.*

Physcia parietina, forma *aureola* (Acharius).

Physcia parietina, forma *aureola* (Acharius); Nyl. in Comptes rendus, lxxxi. p. 725 (reprint, p. 6).

St Paul Island. *De l'Isle.*

Physcia saxicola, Nyl.

Physcia saxicola, Nyl. in Comptes rendus, lxxxi. p. 725 (reprint, p. 6).

St Paul Island. *De l'Isle.*

Lecanora fulgescens, Nyl.

Lecanora fulgescens, Nyl. in Comptes rendus, lxxxi. p. 725 (reprint, p. 6).

St Paul Island. *De l'Isle.*

Opegraphia consimillima, Nyl.

Opegraphia consimillima, Nyl. in Comptes rendus, lxxxi. p. 726 (reprint, p. 7).

St Paul Island. *De l'Isle.*

Stigmatidium leucolytum, Nyl.

Stigmatidium leucolytum, Nyl. in Comptes rendus, lxxxi. p. 726 (reprint, p. 7).

St Paul Island. *De l'Isle.*

Verrucaria æthioboliza, Nyl.

Verrucaria æthioboliza, Nyl. in Comptes rendus, lxxxi. p. 726 (reprint, p. 7).

St Paul Island. *De l'Isle.*

Lecanora milvina, Wahlenb.

Lecanora milvina, Wahlenb.; Nyl. in Comptes rendus, lxxxi. p. 725 (reprint, p. 6).

St Paul Island. *De l'Isle.*

Lecanora subsulphurata, Nyl.

Lecanora subsulphurata, Nyl. in Comptes rendus, lxxxi. p. 725 (reprint, p. 6).

St Paul Island. *De l'Isle.*

Urceolaria deuteria, Nyl.

Urceolaria deuteria, Nyl. in Comptes rendus, lxxxi. p. 725 (reprint, p. 6).

St Paul Island. *De l'Isle.*

Lecidea parasemops, Nyl.

Lecidea parasemops, Nyl. in Comptes rendus, lxxxi. p. 725 (reprint, p. 6).

St Paul Island. *De l'Isle.*

Lecidea conioptoides, Nyl.

Lecidea conioptoides, Nyl. in Comptes rendus, lxxxi. p. 725 (reprint, p. 6).

St Paul Island. *De l'Isle.*

FUNGI.

There are no fungi in the English collections, and if the French or Austrians collected any, they have not, so far as we know, published them.

ALGÆ.

The following algæ are recorded from St Paul Island in the Reise der oesterreichischen Fregatte Novara, Grunow in Bot., i. pp. 29–94 :—

Hypheothrix laminosa, *Cladophora hospita*, *Cladophora* (*Spongomorpha*) *pectinella*, *Enteromorpha bertolonii*, *Enteromorpha fulvescens*, *Enteromorpha minima*, *Ectocarpus*

approximatus, Ectocarpus hinksiæ, Scytosiphon lomentarium, Asperococcus pusillus, Punctaria latifolia, Zonaria diesingiana, Desmarestia chordalis, Laminaria pallida, Macrocystis pelagica, Ecklonia buccinalis, Porphyra cordata, Porphyra laciniata, Bangia versicolor, Callithamnium microptilum, Callithamnium pennula, Corynospora willerstorfiana, Griffithsia tasmanica, Ceramium parvulum, Schizymenia obovata, Shimmelmannia frauenfeldii, Epymenia obtusa, Gigartina livida, Gigartina runcinata, Callophyllis variegata, Callophyllis hombroniana, Gymnogongrus vermicularis, Rhodymenia linearis, Rhodymenia prolifera, Plocamium suhrii, Plocamium corallorhiza, Rhodophyllis capensis, Corallina officinalis, Corallina muscoides, Caulacanthus spinellus, Hypnea esperi, Gelidium cartilagineum, Suhria vittata, Suhria reptans, Gracilaria corniculata Dicurella flabellata, Nitophyllum uncinatum, Nitophyllum acrospermum, Nitophyllum affine, Delesseria dichotoma, Polysiphonia ceratocladia, Polysiphonia anisogona, Bostrychia mixta, Rytiphlæa cloiophylla, Rytiphlæa capensis, Chondriopsis capensis, Chondriopsis sedifolia, Sarcomenia intermedia.

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(*Synonyms and Names of Plants incidentally mentioned in italics*).

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PLATE XIV.

PLATE XIV.

Portions of branches and flowers of *Cereus insularis*, natural size.

Figure 1.—A cluster of spines.

,, 2.—An anther, with portion of the filament.

,, 3.—Apex of style with stigmas : all enlarged.

Drawn from a specimen in Kew Herbarium, collected by Mr Moseley.

h del.

M^c Farlane & Erskine, Lith^rs Edin^r

CEREUS INSULARIS. *Hemsl.*

PLATE XV.

PLATE XV.

Flower and fruit-bearing branches of *Gonolobus micranthus*, natural size.

Figure 1.—Portion of under surface of leaf.

„ 2.—A flower, perhaps too flat.

„ 3.—A calyx lobe, with two of the alternating glands.

„ 4.—Vertical section of the flower.

„ 5.—Portion of the corona.

„ 6.—Gynostegium.

„ 7.—A pair of pollinia.

„ 8.—A seed: all the figures more or less enlarged.

Drawn from a specimen in Kew Herbarium, collected by Mr Moseley.

M. Smith. del.

M.c Farlane & Erskine, Lith.rs Edin.r

GONOLOBUS MICRANTHUS, *Hook. f.*

PLATE XVI.

PLATE XVI.

Figure A.—Portion of a vigorous specimen of *Hedyotis adscensionis*, DC., natural size.

,, B.—A branch of a stunted plant of the same.

,, 1.—A leaf with its stipules.

,, 2.—A leaf seen from beneath.

,, 3.—A flower from the stunted plant (Fig. B.).

,, 4.—A flower from the more vigorous plant (Fig. A.).

,, 5.—Corolla of the short-tubed form laid open, showing the insertion of the stamens.

,, 6.—A style with stigma from the same.

,, 7.—Vertical section through a half-ripe fruit.

,, 8.—A ripe fruit in which the calyx has become quite glabrous.

,, 9.—One of the carpels after it has separated from the exocarp, seen from the inner face, and showing the apical and loculicidal dehiscence.

,, 10.—Side view of the same.

,, 11.—Seeds, natural size.

,, 12.—Seeds: all the figures enlarged more or less, except where otherwise stated.

The drawings were made from specimens in Kew Herbarium.

HEDYOTIS ADSCENSIONIS, *D.C.*

PLATE XVII.

PLATE XVII.

Portion of a plant of *Euphorbia origanoides*, natural size.

Figure 1.—Inflorescence.

„ 2.—Involucre and advanced female flower.

„ 3.—Portion of the involucre spread open, showing the thin fringed plates that project in towards the centre.

„ 4.—A male flower.

„ 5.—A mature capsule.

„ 6.—Seeds, natural size.

„ 7.—A seed: all enlarged except Fig. 6.

Drawn from a specimen in Kew Herbarium, collected by Mr Moseley.

M. Smith del. M^c Farlane & Erskine Lith^rs Edin^r

EUPHORBIA ORIGANOIDES, L.

PLATE XVIII.

PLATE XVIII.

A and B, the largest and the smallest plants respectively of *Fimbristylis* (*Oncostylis*) *neglecta*, in the Kew Herbarium, collected by Dr. Burchell; both natural size.

Figure 1.—A section of a leaf.

„ 2.—A cluster of spikelets.

„ 3.—A single spikelet.

„ 4.—A glume.

„ 5.—A very young flower.

„ 6.—A flower further advanced.

„ 7.—A nut: all enlarged.

In Burchell's manuscript notes the spikelets of this plant are described as about 6-flowered, which was doubtless correct, for some of his specimens, from which the lower flowers have mostly fallen away, probably bore quite as many as six flowers in each spikelet.

Smith del W Gibb. lith

FIMBRISTYLIS (ONCOSTYLIS) NEGLECTA, *Hemsl.*

PLATE XIX.

PLATE XIX.

A and B, plants of *Fimbristylis* (*Oncostylis*) *lichtensteiniana*, both natural size.

Figure 1.—Portion of a culm with basal sheaths, from the plant A.

,, 2.—A head of spikelets.

,, 3.—A glume, from the same plant.

,, 4.—Portion of a culm with basal sheaths, from the plant B.

,, 5.—A head of spikelets.

,, 6.—A flower.

,, 7.—A nut, from the same plant: all enlarged.

The drawing A represents a plant in Kew Herbarium collected by Dr Burchell; and B, a plant collected by Sir Joseph Hooker.

The two forms are very different in appearance, and at first sight would be taken for distinct species. One has long, slender, flexible culms, with two or three, or sometimes even only one spikelet in each head; while the other has shorter, stouter, quite rigid culms, bearing heads of numerous spikelets. In the former the sheaths terminate in short leaves; in the latter they are quite truncate.

FIMBRISTYLIS

PLATE XX.

PLATE XX.

Portions of a small frond of *Pteris paleacea*, natural size.

Figure 1.—The frond.

„ 2.—The stipes.

„ 3.—Three pinnules.

„ 4.—A sporangium, enlarged.

The drawing of the stipes is from a specimen in Kew Herbarium collected by Dr Burchell; and the other parts from a specimen collected by Dr Seemann.

PTERIS PALEACEA, *Roxb.*

PLATE XXI.

PLATE XXI.

Portions of rhizome and frond of *Asplenium platybasis*, natural size.

Figure 1.—Portion of a segment of the frond, enlarged.

Figures 2 and 3.—Sporangia, enlarged.

Drawn from a specimen in the Kew Herbarium from St Helena, collected by Dr Burchell.

Asplenium platybasis, *Kunze.*

PLATE XXII.

PLATE XXII.

Portions of fronds of *Asplenium* (*Diplazium*) *nigro-paleaceum*, natural size.

Figure 1.—Part of two pinnules, enlarged.

„ 2.—Part of a tertiary segment, more enlarged.

„ 3.—A sporangium, enlarged.

The stipes was drawn from a specimen in Kew Herbarium collected by Dr Burchell, and the other parts from a specimen collected by Captain Haughton.

del. W. Gibb, lith.

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ASPLENIUM (DIPLAZIUM) NIGRO-PALEACEUM. *Braun*

PLATE XXIII.

PLATE XXIII.

A plant of *Cyperus* (*Papyrus*) *atlanticus*, natural size.

Figure 1.—A portion of a leaf from near the apex.

„ 2.—A spikelet.

„ 3.—A glume with its basal appendages as it tears from the rhachis when young.

„ 4.—Portion of rhachis from which the glumes have fallen, leaving the persistent appendages.

„ 5.—A flower.

„ 6.—A nut: all the figures enlarged.

Drawn from a specimen in the Kew Herbarium, collected by Sir Joseph D. Hooker.

CYPERUS (Papyrus) ATLANTICUS, *Hemsl.*

PLATE XXIV.

PLATE XXIV.

Figures A. and B. plants of *Fimbristylis* (*Oncostylis*) *nesiotis*, natural size.

Figure 1.—Section of a leaf.

„ 2.—A spikelet.

„ 3.—Stamens and pistil from a very young flower.

„ 4.—Stamens and pistil from an expanded flower.

„ 5.—An anther.

„ 6.—A very young nut bearing the persistent enlarged base of the style: all the figures more or less enlarged.

Drawn from a specimen in the Kew Herbarium, collected by Sir Joseph D. Hooker.

FIMBRISTYLIS (Trichostylis) NESIOTIS *Hemsl.*

PLATE XXV.

PLATE XXV.

Figure 1.—A branch of *Phylica nitida*, bearing male flowers, drawn from a specimen in Kew Herbarium, collected in Tristan da Cunha by Carmichael.

,, 2.—A branch bearing female flowers (or perhaps organically if not functionally bisexual flowers), from a specimen collected in Amsterdam Island by De l'Isle.

,, 3.—A barren branch, from a specimen collected by Mr Moseley in Inaccessible Island.

,, 4.—A fruit-bearing branch, from a specimen collected by Mr Moseley in Nightingale Island: all four figures natural size.

,, 5.—A young leaf seen from above.

,, 6.—The same seen from below.

,, 7.—A male flower.

,, 8.—A petal.

,, 9.—Front view of a stamen.

,, 10.—Back view of the same.

,, 11.—A stamen with an empty anther.

,, 12.—A female flower, from which the calyx lobes, petals, and sterile (?) stamens have been removed.

,, 13.—A vertical section of the same.

,, 14.—A ripe fruit.

,, 15.—A cross section of the same, showing that it separates into three cocci.

,, 16.—A seed with its aril attached.

,, 17.—Aril removed, seen from above: all the figures more or less enlarged.

...th. del. W. Gibb. lith.

G. Waterston & Sons, imp.

PHYLICA NITIDA, *Lamarck*

PLATE XXVI.

PLATE XXVI.

A plant of *Gnaphalium pyramidale*, natural size.

Figure 1.—A capitulum.

„ 2.—One of the bracts of the involucre.

„ 3.—One of the outermost female flowers with a very narrow corolla.

„ 4.—A central flower.

„ 5.—A bristle of the pappus.

„ 6.—A stamen.

„ 7.—Portion of style with stigmas: all enlarged.

Drawn from a specimen in Kew Herbarium from Inaccessible Island, collected by Mr Moseley.

M^c Farlane & Erskine, Lith^rs Edin^r

GNAPHALIUM PYRAMIDALE, *Thouars.*

PLATE XXVII.

PLATE XXVII.

A plant of *Cotula moseleyi*, natural size.

Figure 1.—Receptacle and part of the involucre.

,, 2.—One of the outer flowers.

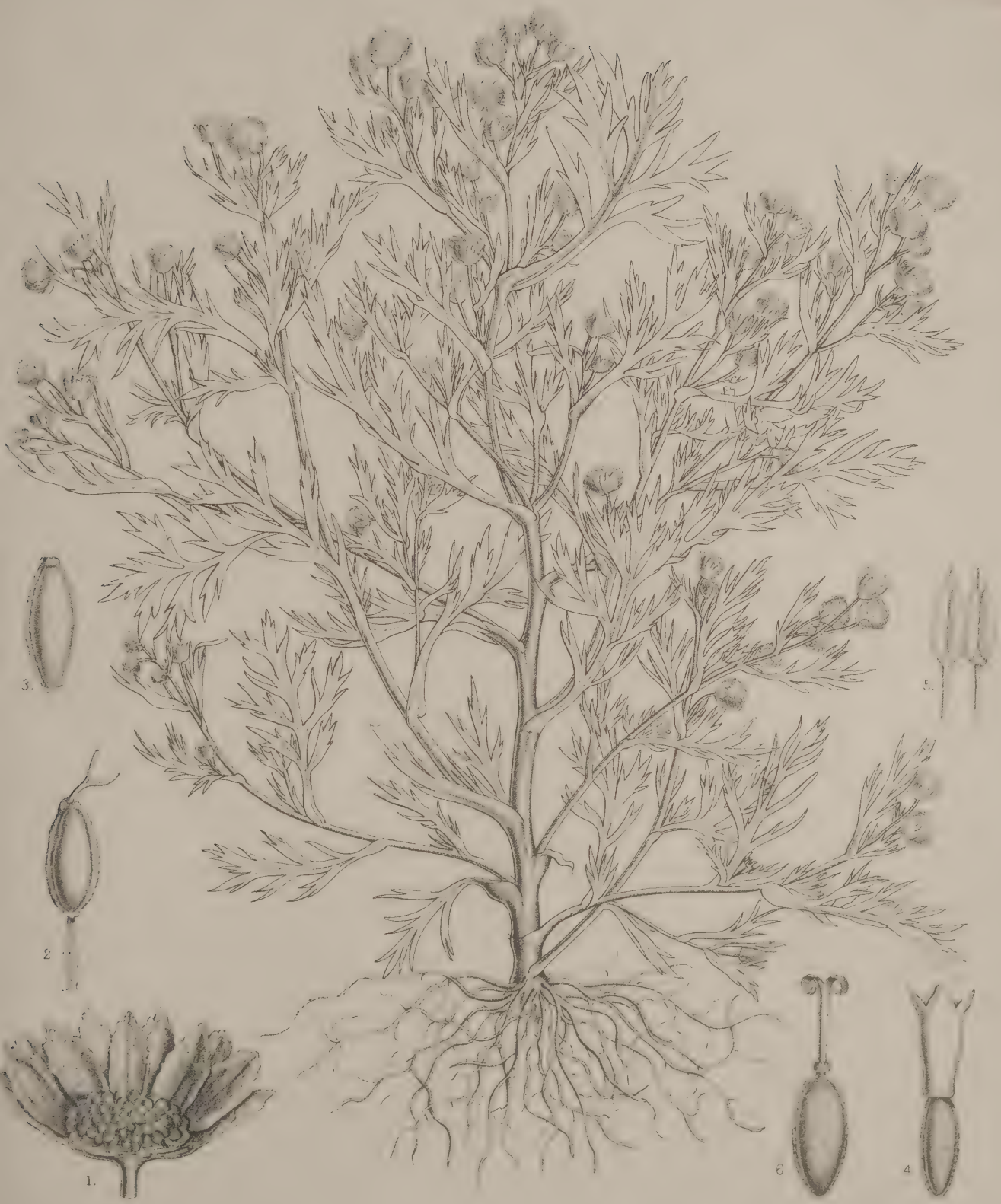
,, 3.—Achene of the same.

,, 4.—One of the inner flowers.

,, 5.—Two stamens from the same.

,, 6.—Pistil of the same.

Drawn from a specimen in Kew Herbarium, collected by Mr Moseley.



M. Smith del.

COTULA MOSELEYI, *Hemsl.*

PLATE XXVIII.

PLATE XXVIII.

Portions of plants of *Chenopodium tomentosum*, natural size.

Figure 1.—Flowering branchlet.

„ 2.—A flower.

„ 3.—A flower fully expanded.

„ 4.—Back view of a stamen.

„ 5.—Front view of a stamen.

„ 6.—A pistil.

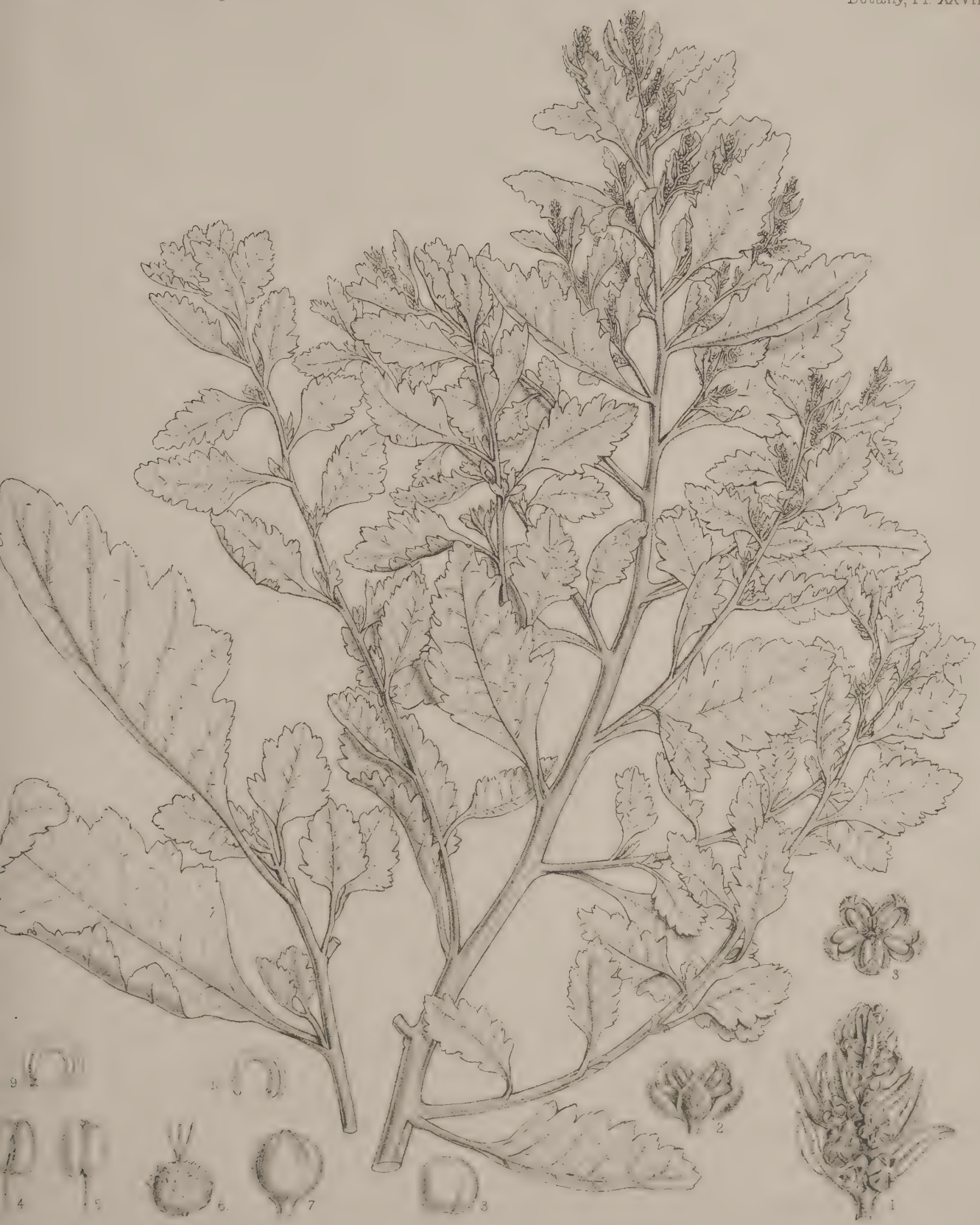
„ 7.—Fruit.

„ 8.—A seed.

„ 9.—Section of the same, showing the curved embryo.

„ 10.—Embryo removed: all enlarged.

The drawing was prepared from specimens in Kew Herbarium, collected by Carmichael, Milne, and Moseley



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CHENOPODIUM TOMENTOSUM, *Thouars*

PLATE XXIX.

PLATE XXIX.

A plant of *Atriplex plebeja*, natural size.

Figure 1.—A cluster of female flowers, with one male flower.

„ 2.—A male flower.

„ 3.—Front view of a stamen.

„ 4.—Back view of a stamen.

„ 5.—A female flower.

„ 6.—A young female flower, with the bracteoles partially removed.

„ 7.—A pistil in quite a young stage.

„ 8.—A pistil in a more advanced stage : all very much enlarged.

The drawing represents a specimen in Kew Herbarium, collected by Carmichael.

M. Smith del.

M^c Farlane & Erskine, Lith^rs Edin^r

ATRIPLEX PLEBEJA, *Carmich.*

PLATE XXX.

PLATE XXX.

An entire plant, except the root, of *Rumex frutescens*, with a branch in young fruit, both natural size.

Figure 1.—A cluster of flowers.

,, 2.—A single flower in bud.

,, 3.—An expanded flower.

,, 4.—A stamen.

,, 5.—A young fruit, showing the two perianth segments which are destitute of tubercles.

,, 6.—The same, showing the odd segment of the perianth bearing a tubercle.

The drawing of the entire plant, and the analysis of the flower, are from a specimen in Kew Herbarium, collected by Mr Moseley in Tristan da Cunha; and the fruiting branch with figures 5–6 from a specimen collected by Carmichael.

ch del.

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RUMEX FRUTESCENS, *Thouars.*

PLATE XXXI.

PLATE XXXI.

A and B, a plant and portion of a plant of *Scirpus sulcatus*, natural size.

Figure 1.—A cluster of spikelets.

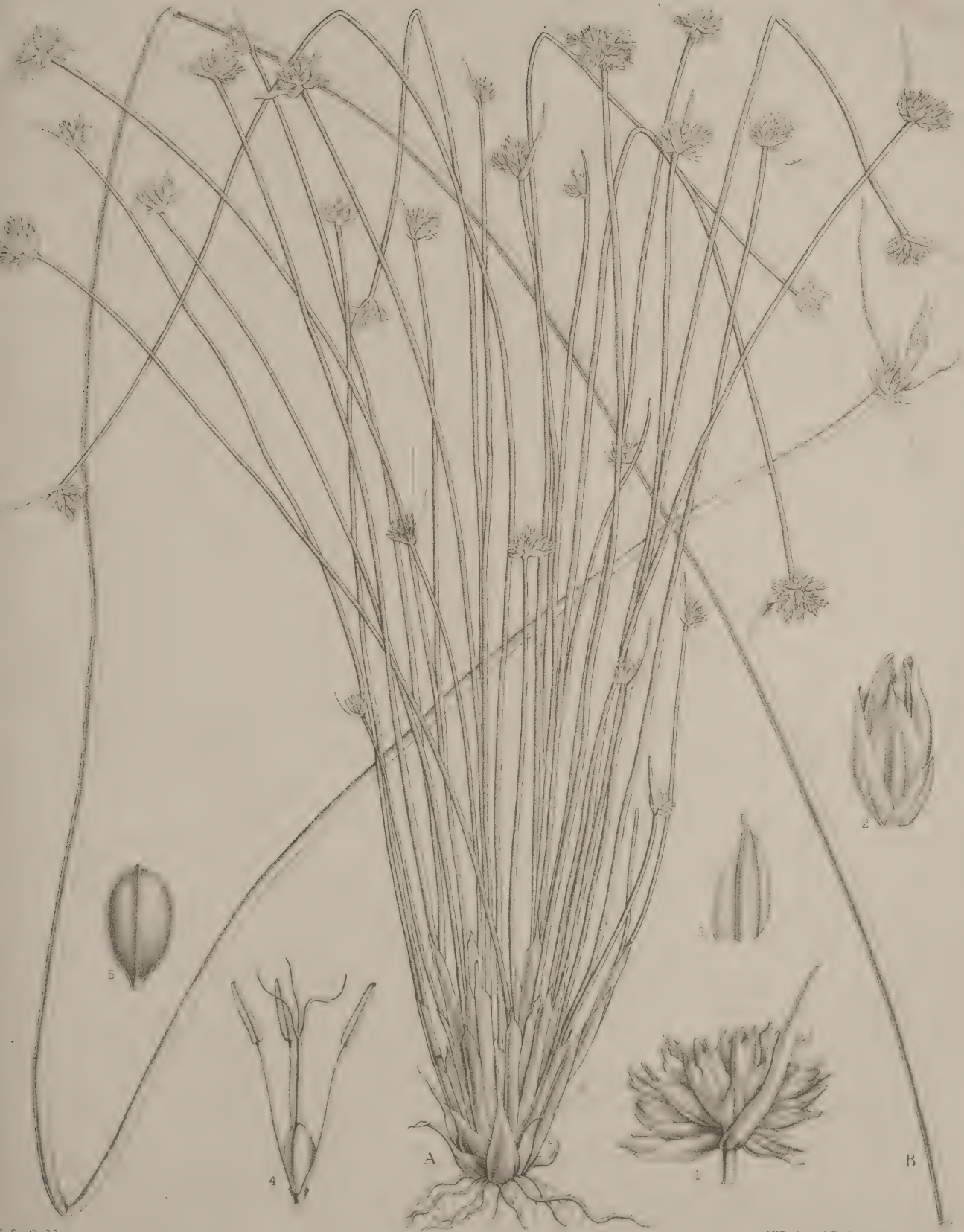
„ 2.—A single spikelet.

„ 3.—A glume.

„ 4.—A flower.

„ 5.—A nut: all enlarged.

The figure A, was drawn from a specimen in Kew Herbarium from Tristan da Cunha, collected by MacGillivray, and B, from a specimen collected in Inaccessible Island by Mr Moseley.



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SCIRPUS SULCATUS, *Thouars.*

PLATE XXXII.

PLATE XXXII.

A plant of *Scirpus sulcatus*, var. *moseleyanus*, natural size.

Figure 1.—A leaf.

„ 2.—An inflorescence.

„ 3.—A cluster of three unequal spikelets.

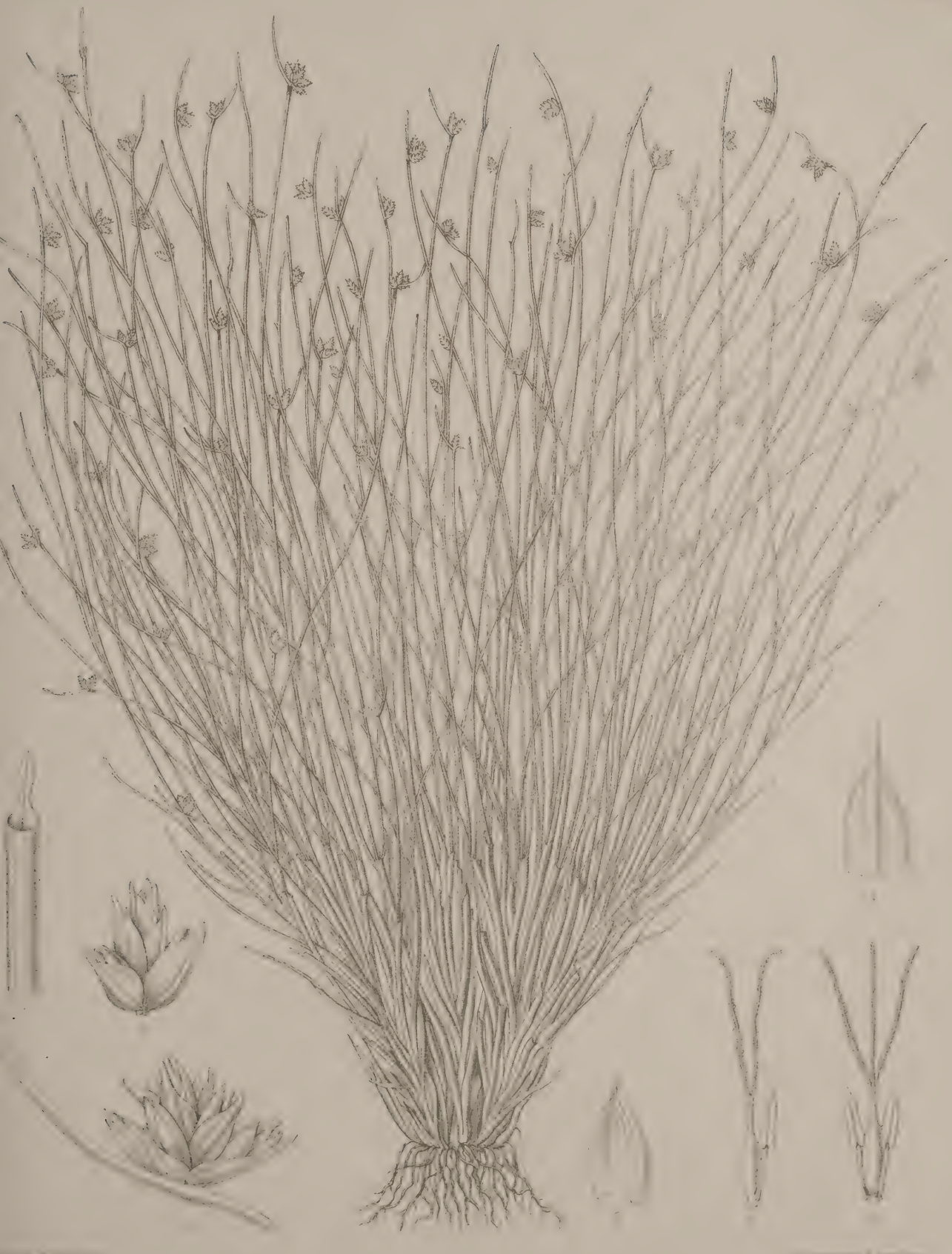
„ 4.—An outer glume.

„ 5.—A flowering glume.

„ 6.—A monandrous flower with a bifid style.

„ 7.—A diandrous flower with a trifid style: all very much enlarged.

Drawn from a specimen in Kew Herbarium, collected by Mr Moseley.



SCIRPUS SULCATUS, *Thouars.* var. MOSELEYANUS. *Hemsl.*

PLATE XXXIII.

PLATE XXXIII.

Figs. A and 1–6. *Scirpus thouarsianus*, var. *pallescens*.

Figure A.—A plant, natural size.

„ 1.—A leaf.

„ 2.—A spikelet.

„ 3.—Lowermost glume of the spikelet, seen from the outside.

„ 4.—One of the flowering glumes seen from the inside.

„ 5.—A flower.

„ 6.—A nut of which the reticulation is somewhat exaggerated: all the figures enlarged, except where otherwise stated.

The drawing was made from a plant collected by Mr Moseley in Inaccessible Island.

Figs. 7–12. *Scirpus thouarsianus*, var. *virens*.

Figure 7.—A leaf.

„ 8.—One of the larger inflorescences.

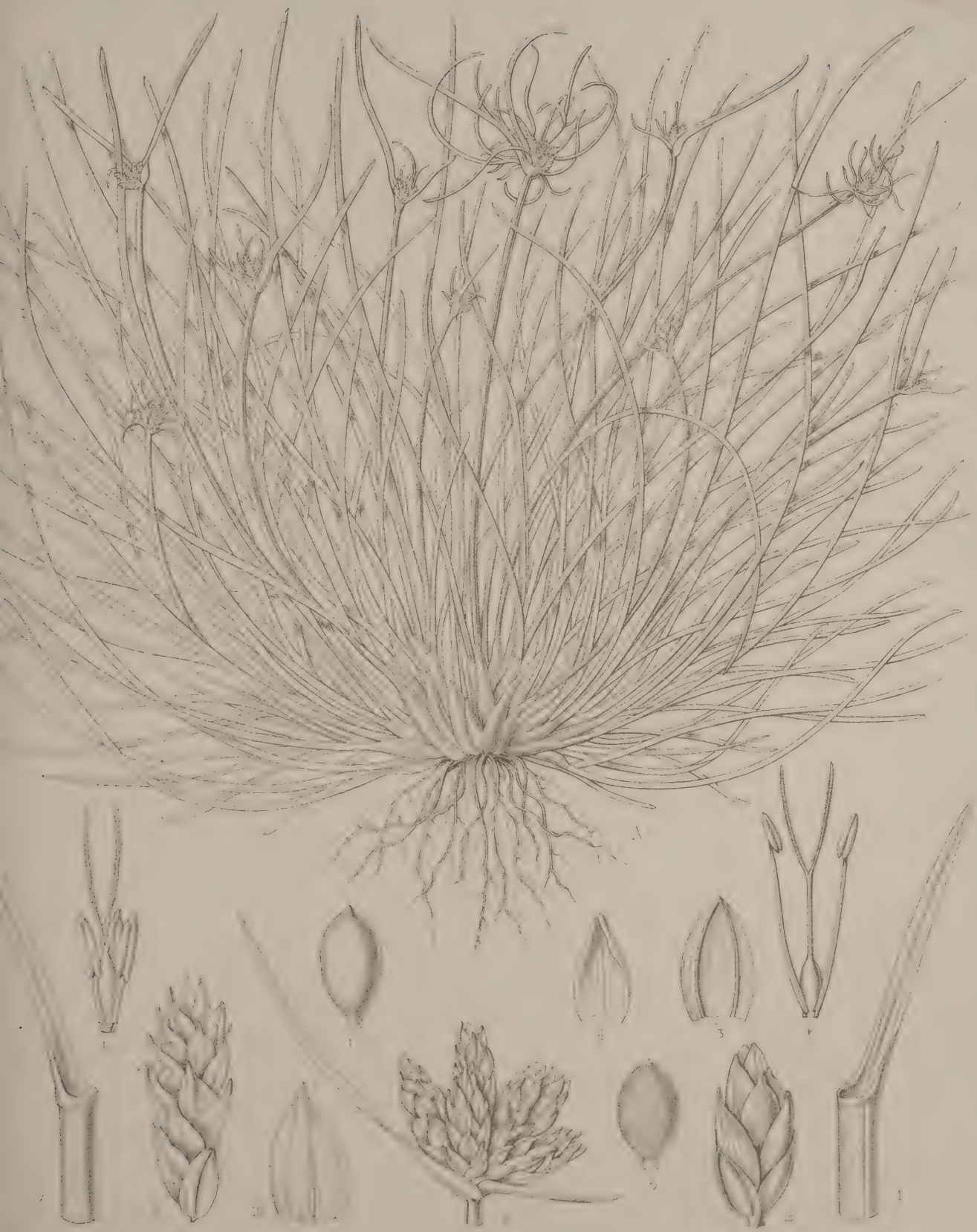
„ 9.—A spikelet of the same.

„ 10.—A flowering glume.

„ 11.—A flower in a very young state.

„ 12.—An immature nut: all very much enlarged.

Drawn from a plant collected by Mr Moseley in Nightingale Island.



A. 1–6 SCIRPUS THOUARSIANAS, *Schultes*, var. PALLESCENS, *Hemsl.*
7–12 SCIRPUS THOUARSIANAS, *Schultes*, var. VIRENS, *Hemsl.*

PLATE XXXIV.

PLATE XXXIV.

Figs. A and 1–7. *Scirpus oliveri.*

Figure A.—A plant, natural size.

„ 1.—A leaf with part of its sheath.

„ 2.—An inflorescence.

„ 3.—A single spikelet.

„ 4.—An outer glume.

„ 5.—A very young flower.

„ 6.—A pistil.

„ 7.—A young nut, the surface of which is represented too rough in the lithograph : all more or less enlarged.

Drawn from a specimen in Kew Herbarium, collected by Mr Moseley in Inaccessible Island.

Figs. B and 8–16. *Scirpus thouarsianus*, var. *bicolor.*

Figure B.—A plant, natural size.

„ 8.—A leaf.

„ 9.—A proliferous inflorescence.

„ 10.—A normal inflorescence.

„ 11.—Lowermost glume of a spikelet.

Figures 12 and 13.—A flowering glume in different positions.

Figure 14.—A triandrous flower.

„ 15.—A monandrous flower.

„ 16.—An immature nut : all enlarged.

The drawing represents a plant in Kew Herbarium, collected by Milne in Tristan da Cunha.

A. 1-7. SCIRPUS OLIVERI, *Boeckeler*

B. 8-16. SCIRPUS THOUARSIANUS, *Schult.* var BICOLOR, *Hemsl*

PLATE XXXV.

PLATE XXXV.

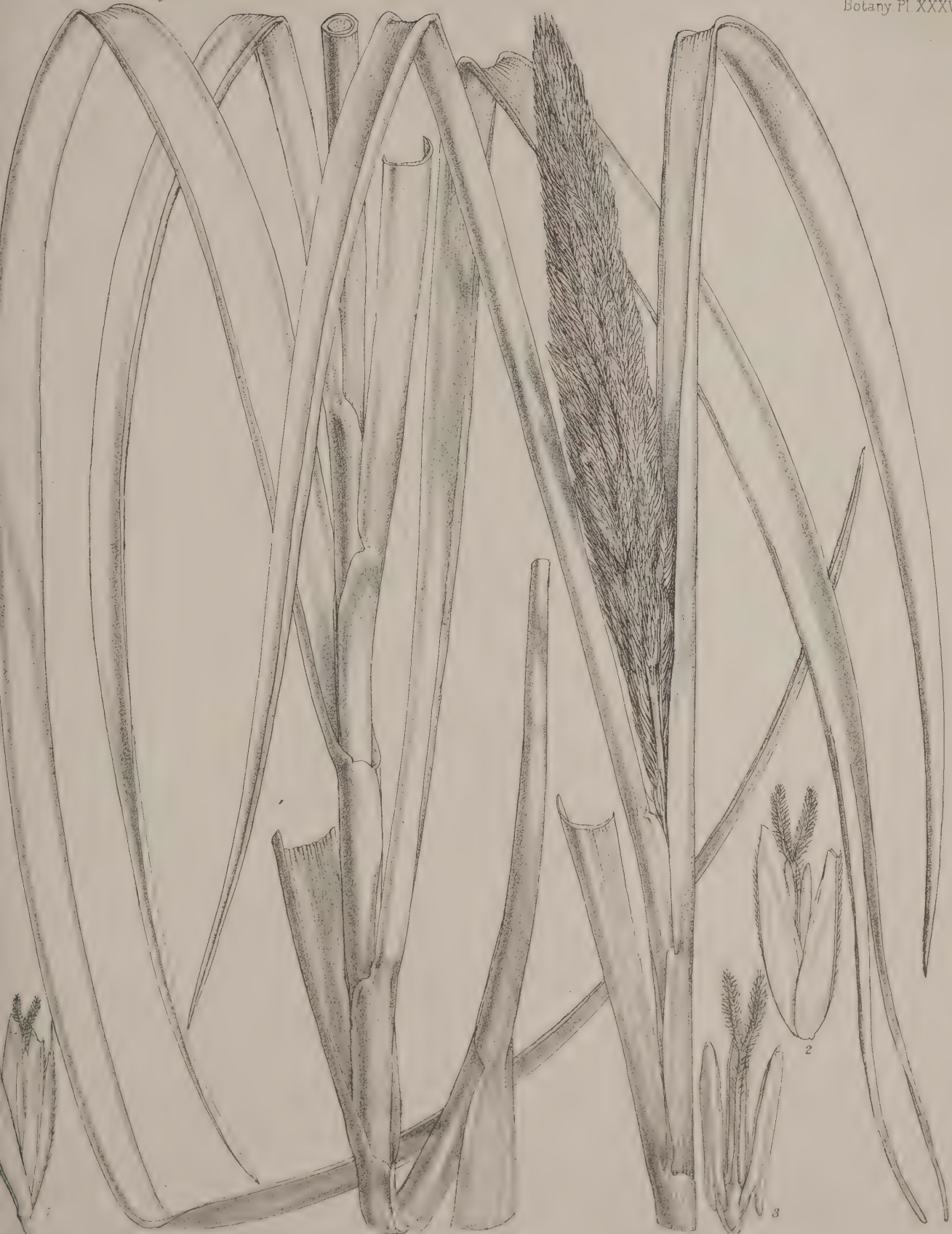
Portions of *Spartina arundinacea*, natural size.

Figure 1.—A spikelet.

„ 2.—A flower.

„ 3.—Stamens and pistil from a bud : all enlarged.

The drawing was made from a specimen in Kew Herbarium from Inaccessible Island, collected by Mr Moseley.



tch del et lith

Hanhart imp

SPARTINA ARUNDINACEA,

PLATE XXXVI.

PLATE XXXVI.

Portion of a plant of *Agrostis ramulosa*, natural size.

Figure 1.—A leaf.

„ 2.—A panicle.

Figures 3 and 4.—The outer empty glumes.

Figure 5.—A flower.

„ 6.—Flowering glume.

„ 7.—Pale.

„ 8.—Lodicules.

„ 9.—A stamen.

„ 10.—Pistil: all much enlarged.

The drawing was made from specimens in Kew Herbarium, collected in Tristan da Cunha by MacGillivray on the Voyage of H.M.S. "Herald."

Smith, del. W. Gibb, lith.

G. Waterston & Sons, imp.

AGROSTIS RAMULOSA, *Carmich.*

PLATE XXXVI.

Portion of a plant of *Agrostis ramulosa*, natural size.

Figure 1.—A leaf.

„ 2.—A panicle.

Figures 3 and 4.—The outer empty glumes.

Figure 5.—A flower.

„ 6.—Flowering glume.

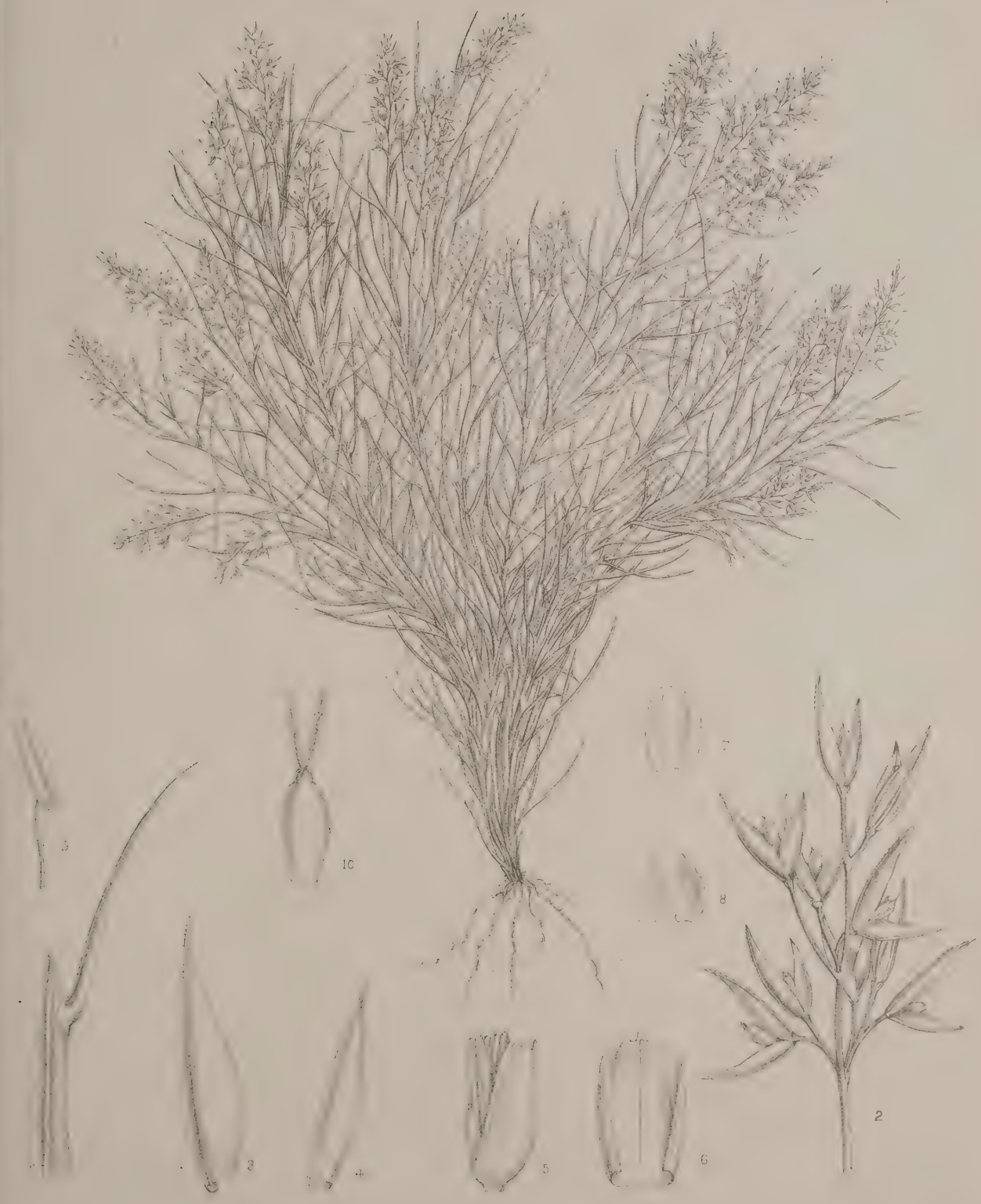
„ 7.—Pale.

„ 8.—Lodicules.

„ 9.—A stamen.

„ 10.—Pistil: all much enlarged.

The drawing was made from specimens in Kew Herbarium, collected in Tristan da Cunha by MacGillivray on the Voyage of H.M.S. "Herald."



M. Smith, del. W. Gibb, lith.

G. Waterston & Sons, imp.

AGROSTIS RAMULOSA, *Carmich.*

PLATE XXXVII.

PLATE XXXVII.

A plant of *Agrostis media*, natural size.

Figure 1.—A leaf.

„ 2.—A panicle.

Figures 3 and 4.—The outer empty glumes.

Figure 5.—Flowering glume.

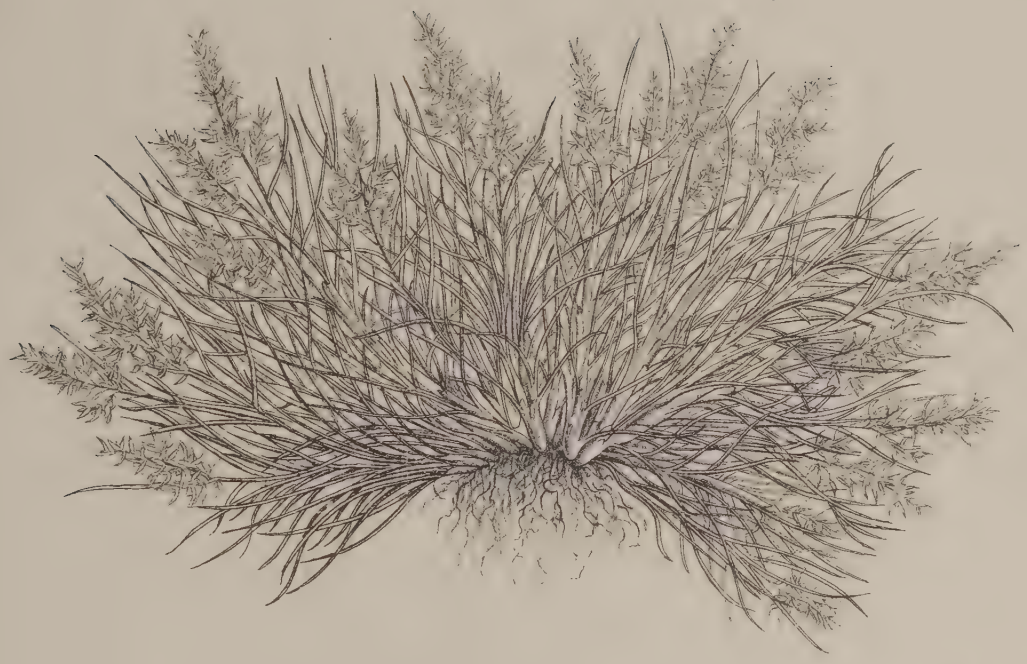
„ 6.—Pale.

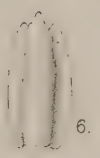
„ 7.—Lodicules.

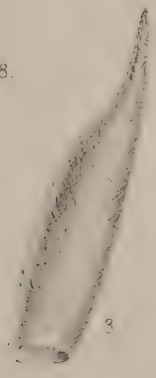
„ 8.—Pistil.

„ 9.—Young grain : all very much enlarged.

Drawn from a specimen in Kew Herbarium, collected in Tristan da Cunha by Mr Moseley.







M. Smith del.

Mc Farlane & Erskine, Lith.rs Edin.r

AGROSTIS MEDIA, *Carmich.*

PLATE XXXVIII.

PLATE XXXVIII.

A plant of *Hymenophyllum æruginosum*, natural size.

Figures 1 and 2.—Portions of a frond very much enlarged.

Drawn from a specimen in Kew Herbarium, collected by Mr Moseley.

1

2

h del et lith

Hanhart imp

HYMENOPHYLLUM ÆRUGINOSUM, (

PLATE XXXIX.

PLATE XXXIX.

A rhizome and young frond, and the greater portion of a fully developed frond of *Nephrodium aquilinum*, natural size.

Figure 1.—An ultimate segment seen from above.

,, 2.—An ultimate segment seen from below.

,, 3.—A sorus: all enlarged.

The drawing of the rhizome and young frond is from a specimen in Kew Herbarium collected by Mr Moseley, and the fully developed frond from a specimen collected by Carmichael, and bearing his manuscript name of *Polypodium acunhianum*: both from Tristan da Cunha.

J. Fitch. del et lith.

NEPHRODIUM AQUILINUM, *Hensl*

PLATE XL.

PLATE XL.

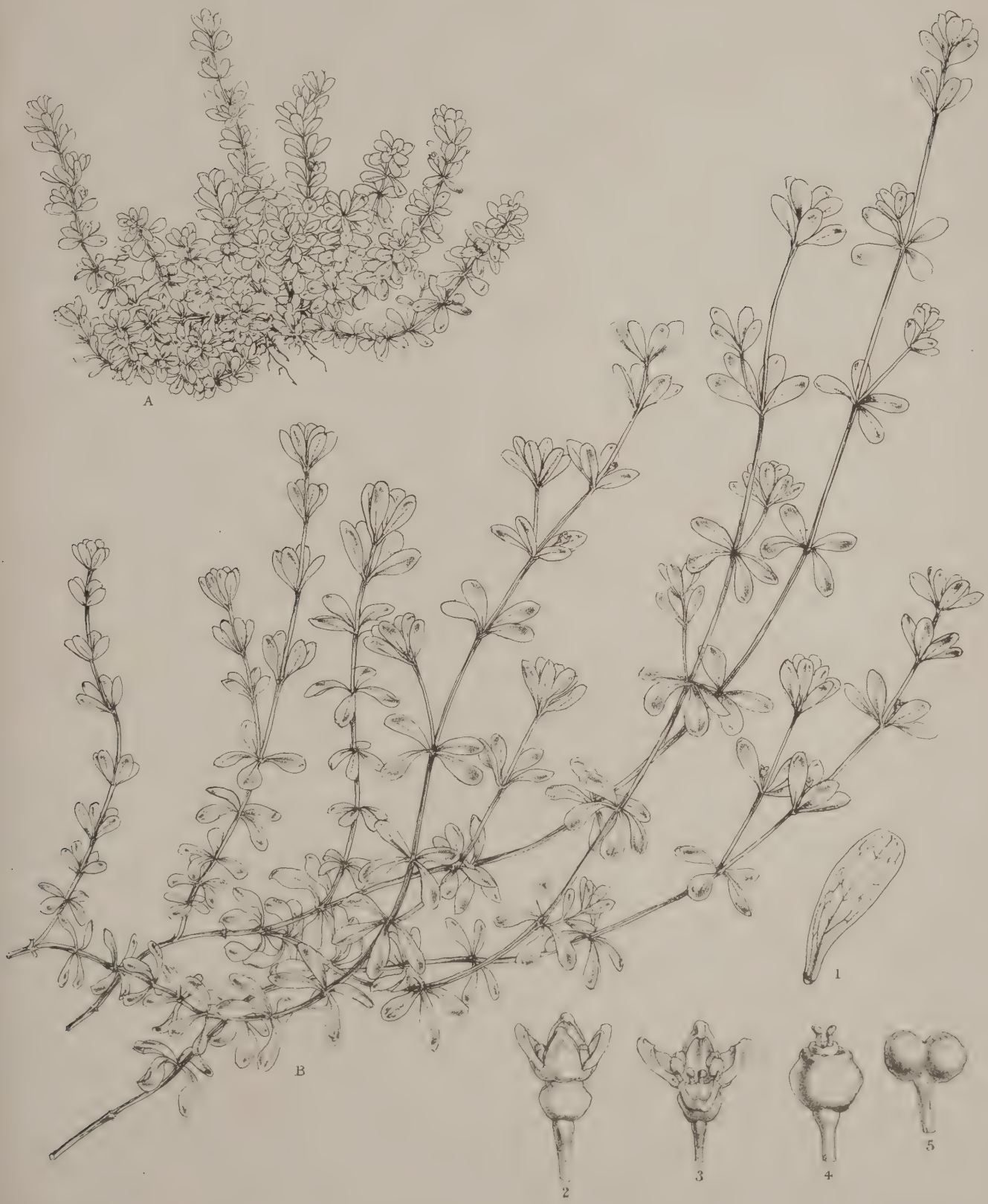
A and B, plants of *Galium antarcticum*, natural size.

Figure 1.—A leaf.

Figures 2 and 3.—Flowers in different positions.

„ 4 and 5.—Fruit in different stages: all enlarged.

The drawing was made from specimens in Kew Herbarium, collected by the Rev. A. E. Eaton in Kerguelen Island.



W.H. Fitch del. et lith.

GALIUM ANTARCTICUM, *Hook.*

PLATE XLI.

PLATE XLI.

A plant of *Plantago stauntoni*, having flowers in which the corolla-tube is longer than the lobes; natural size.

Figure 1.—A bract.

„ 2.—A flower.

„ 3.—A corolla laid open, showing the persistent filaments from which the anthers have fallen.

„ 4.—A pistil in an advanced stage.

„ 5.—A vertical section at a somewhat later stage, showing the attachment of two of the lateral seeds and the solitary apical one.

„ 6.—A ripe fruit in the persistent calyx subtended by a bract.

„ 7.—The operculum or upper part of the capsule, with the placenta protruding below.

„ 8.—The placenta, showing the points of attachment of two of the lateral seeds and the solitary apical one.

„ 9.—Ventral view of one of the lateral seeds.

„ 10.—Apical seed: all enlarged.

Drawing made from a plant in Kew Herbarium, collected by Mr De l'Isle in St Paul Island.

del. W.Gibb, lith

G.Waterston & Sons, imp

PLANTAGO STAUNTONI. *Reichardt.*

PLATE XLII.

PLATE XLII.

Figs. A and 1–6. *Plantago stauntoni.*

Figure A.—A plant having flowers in which the corolla-tube is shorter (young ?) than the lobes, with included stamens ; natural size.

„ 1.—An unopened flower with its bract.

„ 2.—A corolla.

„ 3.—The same laid open, showing the stamens.

„ 4.—Front view of an anther.

„ 5.—Back view of an anther.

„ 6.—A pistil : all enlarged.

Drawing made from a plant in the Kew Herbarium, collected by Lieut. Smith in St Paul Island.

Figs. B, C, and 7–15. *Plantago pentasperma.*

Figure B.—A plant having inconspicuous corollas (young ?), with the tube shorter than the lobes ; natural size.

„ C.—A plant of the form having conspicuous corollas, with the tube longer than the lobes ; natural size.

„ 7.—A flower of C.

„ 8.—A bract.

„ 9.—A corolla laid open, showing the insertion of the long filaments, from which the anthers have fallen away.

„ 10.—An immature capsule.

„ 11.—The upper opercular portion of the capsule which dehisces from the lower, carrying away the placenta and seeds, two of which may be seen protruding below.

„ 12.—A vertical section through the operculum showing two of the lateral and the solitary apical seeds.

„ 13.—A corolla of B.

„ 14.—A lobe of the same with two stamens attached.

„ 15.—A pistil of B : all enlarged.

The drawings of B were made from specimens in the Kew Herbarium, collected by Mr De l'Isle in St Paul Island.

J. Watkinson & Sons, imp.

A. PLANTAGO STAUNTONI, *Reichardt*
B. & C. PLANTAGO PENTASPERMA, *Hemsl.*

PLATE XLIII.

PLATE XLIII.

A plant of *Agrostis difficilis*, natural size.

Figure 1.—Portion of a leaf, with ligule.

„ 2.—Portion of an inflorescence.

„ 3.—A floret.

„ 4.—Flowering glume.

„ 5.—Pale.

„ 6.—Pistil: all the figures enlarged.

Drawn from a specimen in the Kew Herbarium, collected in Amsterdam Island by Mr De l'Isle.

del. W. Gibb, lith.

G. Waterston & Sons imp.

AGROSTIS DIFFICILIS, *Hemsl*

PLATE XLIV.

PLATE XLIV.

A plant of *Agrostis delislei*, natural size.

Figure 1.—Portion of a leaf, with ligule.

„ 2.—Portion of an inflorescence.

Figures 3 and 4.—Outer empty glumes.

Figure 5.—Flowering glume.

„ 6.—Pale.

„ 7.—Lodicules.

„ 8.—Pistil : all the figures enlarged.

Drawn from a specimen in the Kew Herbarium, collected in Amsterdam Island by Mr De l'Isle.

G Waterston & Sons, imp

AGROSTIS DELISLEI, Kunth

PLATE XLV.

PLATE XLV.

A plant, or rather portion of a plant, of *Uncinia brevicaulis*, var. *robustior*, natural size.

Figure 1.—Glume and stamens from which the anthers have fallen.

,, 2.—A female flower and glume.

,, 3.—The same with the glume removed.

,, 4.—Pistil and rhachilla: all enlarged.

The drawing represents a specimen collected by De l'Isle in Amsterdam Island. The tip of the spike is male only, and the whole plant is more robust, otherwise it differs very little from the form which we call *gracilior*.

UNCINIA BREVICAULIS, *Thouars.* var. ROBUSTIOR, *Hemsl.*

PLATE XLVI.

PLATE XLVI.

A plant of *Uncinia brevicaulis*, var. *gracilior*, natural size.

Figure 1.—A male flower with its glume.

„ 2.—A female flower with its glume.

„ 3.—The same without the glume.

„ 4.—The same with the rhachilla and the lower part of the utricle: all enlarged.

The plant figured was collected in Tristan da Cunha by MacGillivray and Milne, and is preserved in Kew Herbarium.

M. Smith del.

M.ºFarlane & Erskine, Lith.ºs Edin.ª

UNCINIA BREVICAULIS *Thouars*, var GRACILIOR, *Hemsl.*

PLATE XLVII.

PLATE XLVII.

A branch of *Pisonia darwinii*, natural size.

Figure 1.—A flower in bud.

„ 2.—An expanded perianth after the stamens have fallen away.

„ 3.—The same laid open.

„ 4.—A flower from which the perianth has been removed.

„ 5.—Front view of a stamen.

„ 6.—Back view of the same.

„ 7.—A pistil with a portion of the wall of the ovary removed, revealing the ovule.

„ 8.—The same unopened; all enlarged.

The drawing was made from a specimen collected by the late Mr Charles Darwin, which is now preserved in the Cambridge University Herbarium.

... del. W. Gibb, lith.

G. Waterston & Sons, imp

PISONIA DARWINII, *Hemsl.*

PLATE XLVIII.

PLATE XLVIII.

Figs. A, B, and 1–4. *Sium helenianum.*

Figure A.—Upper portion of a plant (the specimen Melliss regarded as different from both *Sium helenianum* and *Sium burchellii*), natural size.

„ B.—A leaf sent with the same, natural size.

„ 1.—A petal from a flower taken from A.

„ 2.—Quite young fruit of the same: both very much enlarged.

„ 3.—A ripe fruit of *Sium helenianum* from the same source (detached from plant, and communicated by Melliss in 1867 as "*Angelica bracteata*") as that figured in Hooker's Icones Plantarum, t. 1032.

„ 4.—A cross section of the same: very much enlarged.

Figs. C and 5–7. *Sium burchellii.*

Figure C.—Upper part of a plant, and apparently the very same piece represented somewhat abbreviated in Hooker's Icones Plantarum, t. 1033; natural size.

„ 5.—A petal from the same specimen.

„ 6.—A young fruit (intermediate in its degree of development between figs. 2 and 3).

„ 7.—A cross section of the same: enlarged.

A.B. 1-4 SIUM HELENIANUM, *Hook. f.*
C. 5-7 SIUM BURCHELLII, *Hemsl.*

M'Farlane & Erskine, Lith.rs Edin.r

PLATE XLIX.

PLATE XLIX.

A flowering branch of *Acalypha rubra*, natural size.

Figure 1.—A piece of a male spike.

„ 2.—A male flower.

„ 3.—A stamen.

„ 4.—A female flower.

„ 5.—A mature capsule, seated in its enveloping bract, and lower portion of the male inflorescence.

„ 6.—A seed, natural size.

„ 7.—The same, very much enlarged.

„ 8.—An inflorescence with two female flowers, natural size.

Figures 1 to 5 all more or less enlarged.

The principal figure represents a specimen in Kew Herbarium collected by Mr Bennett, and the male inflorescence, flower, and anther are from the same. Figures 4 to 7 are from Dr Burchell's specimen; and figure 8 is from the specimen in the Sabine collection, on which there are four similar inflorescences.

ACALYPHA RUBRA, *Roxb.*

PLATE L.

PLATE L.

A small tuft of *Eragrostis saxatilis*, natural size.

Figure 1.—Portion of the blade and sheath of a leaf with the fringed ligule.

„ 2.—A spikelet.

Figures 3 and 4.—The outer empty glumes.

Figure 5.—A flowering glume.

„ 6.—A pale, front view.

„ 7.—A very young flower.

„ 8.—Pistil: all very much enlarged.

Drawing made from a plant in Kew Herbarium, collected by Mr Melliss.

...ith, del. W. Gibb, lith.

ERAGROSTIS SAXATILIS. *Hemsl.*

PLATE LI.

PLATE LI.

Figs. A and 1–8. *Demazeria oblitera.*

Figure A.—A plant, natural size.

„ 1.—The blade and portion of the sheath of a leaf.

„ 2.—A spikelet.

Figures 3 and 4.—The two lower empty glumes.

Figure 5.—Flowering glume seen from the side.

„ 6.—Pale.

„ 7.—Pistil.

„ 8.—Caryopsis.

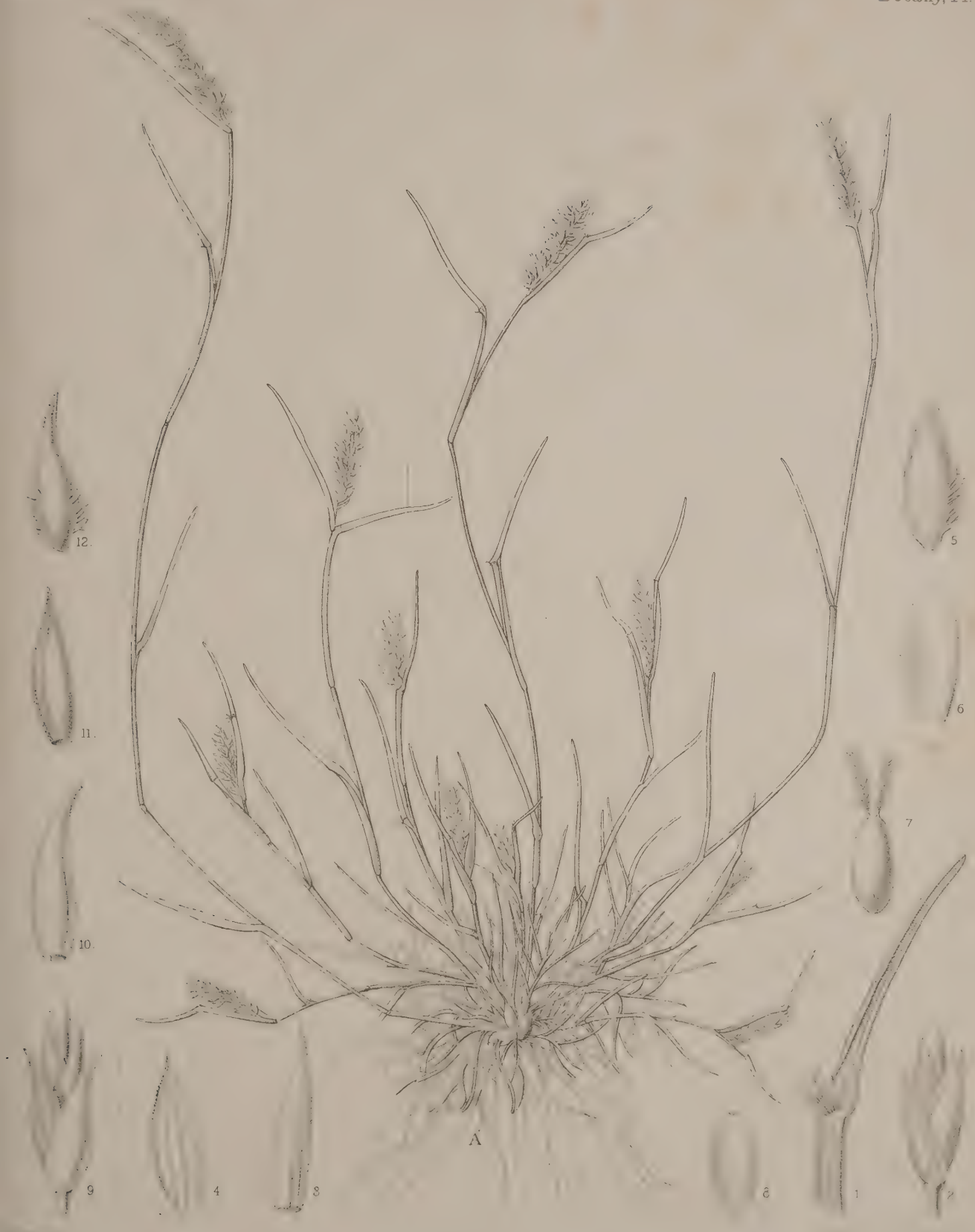
The drawing was made from a plant in Kew Herbarium, collected by Dr Burchell, and the only one known to exist.

Figs. 9–12. *Demazeria acutiflora.*

Figure 9.—A spikelet.

Figures 10 and 11.—The two lower empty glumes of the same.

Figure 12.—Flowering glume, with bearded keel: all enlarged.



A. 1–8 DEMAZERIA OBLITERA, *Hemsl.*
9–12 DEMAZERIA ACUTIFLORA, *Hemsl.*

M^c Farlane & Erskine, Lith^rs Edin^r

PLATE LII.

PLATE LII.

A plant of *Trisetum insulare*, natural size.

Figure 1.—Part of a leaf, showing the ciliolate ligule.

„ 2.—Part of an inflorescence.

Figures 3 and 4.—The outer empty glumes.

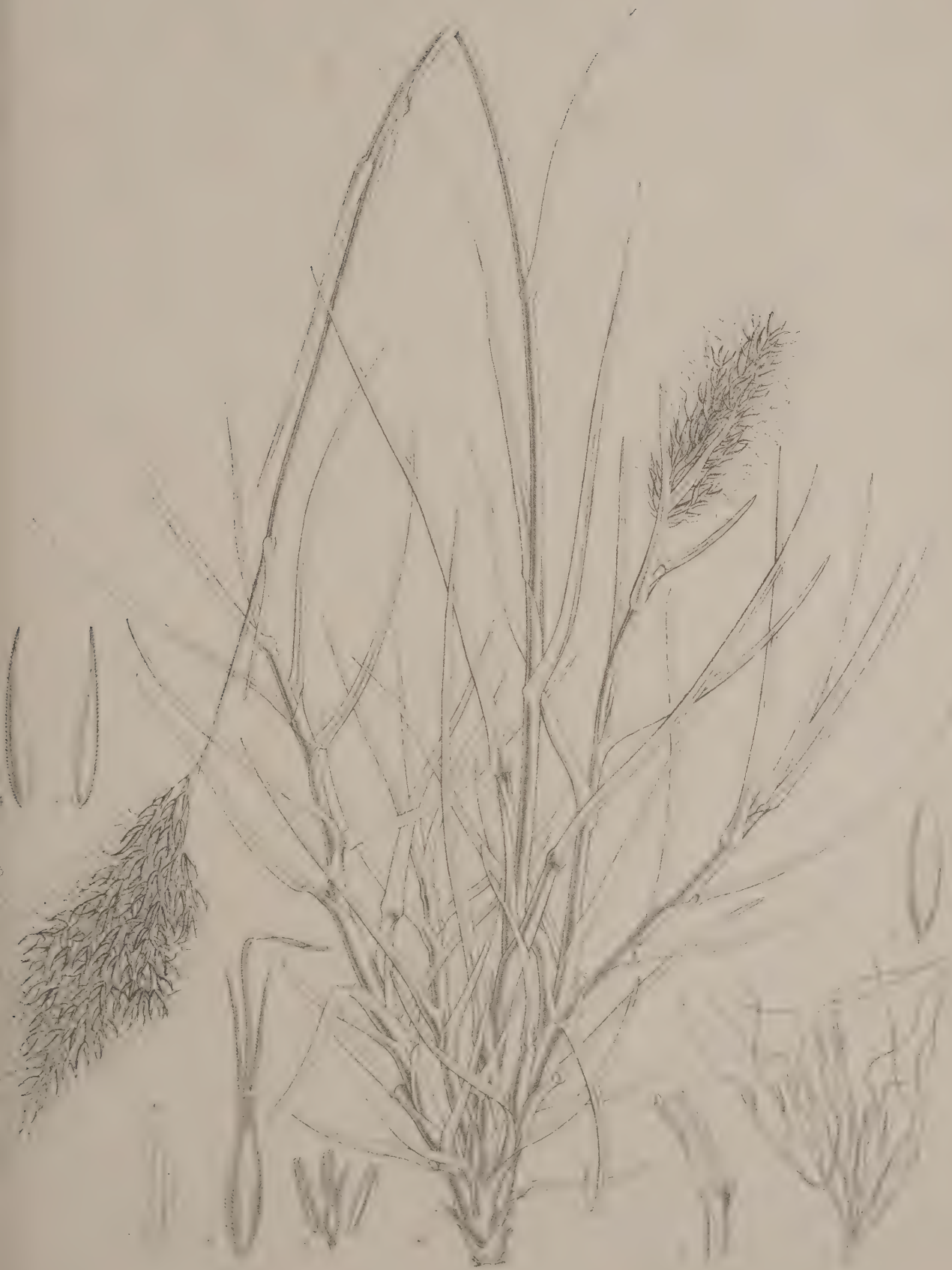
„ 5 and 6.—Flowering glume, the latter much more enlarged.

Figure 7.—Pale.

„ 8.—A very young flower.

„ 9.—Ripe caryopsis: all the figures very much enlarged.

The drawing was made from a plant in Kew Herbarium, collected by Mr MacGillivray in St Paul Island.



TRISETUM INSULARE, *Hemsl.*

PLATE LIII.

PLATE LIII.

Distichophyllum fasciculatum.

Figure 1.—Portion of a plant.

„ 2.—Leaf arrangement.

„ 3.—A leaf, and enlarged cells.

„ 4.—Base of peduncle and perichætium : all except figure 1 enlarged.

Distichophyllum imbricatum.

Figure 1.—Portion of a plant, natural size.

Figures 2 and 3.—Leaves, and enlarged cells.

Grimmia (Schistidium) insularis.

Figure 1.—Portion of a plant.

„ 2.—A leaf with section, and enlarged cells.

„ 3.—Perichætium and capsule.

„ 4.—Ripe capsule, operculum removed : all enlarged except figure 1.

Gottschea carnosa.

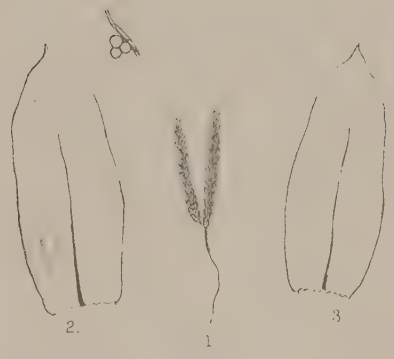
Figure 1.—Portion of plant.

„ 2.—Stem and leaves.

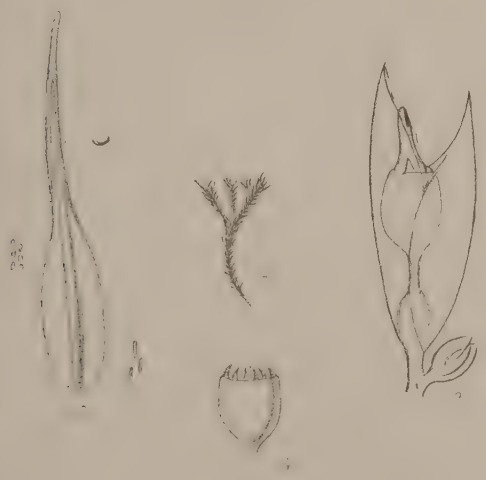
„ 3.—Stem with leaves removed : all except figure 1 enlarged.

Drawn from specimens in the Kew Herbarium collected by Mr Moseley. The first two and the last are from Marion Island, and the third from Heard Island.

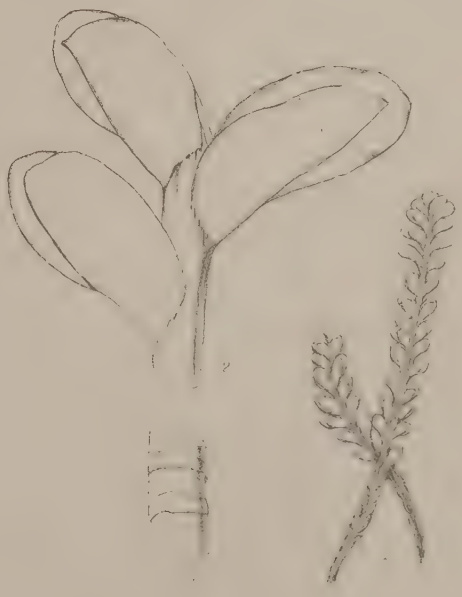
DISTICHOPHYLLUM FASCICULATUM, *Mitt*



DISTICHOPHYLLUM IMBRICATUM, *Mitt.*



GRIMMIA INSULARIS, *Mitt.*



GOTTSCHIA CARNOSA, *Mitt*

18681-

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ON THE

SCIENTIFIC RESULTS

OF THE

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DURING THE YEARS 1873-76

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BOTANY—VOL. I.

PART III.—REPORT ON THE BOTANY OF JUAN FERNANDEZ, THE SOUTH-EASTERN MOLUCCAS, AND THE ADMIRALTY ISLANDS

BY WILLIAM BOTTING HEMSLEY, A.L.S.

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EDITORIAL NOTES.

This Report on the Botany of Juan Fernandez, &c., is the third part of the Botanical Series of Reports on the Scientific Results of the Expedition, and forms one of a series of Reports dealing with Insular Floras.

Botanical notes for the guidance of the Naturalists of the Expedition were prepared at the Royal Gardens, Kew, previous to the departure of the Challenger, and were incorporated in the instructions drawn up by the Circumnavigation Committee of the Royal Society.[1]

The botanical collections of the Expedition referred to in this Report were made by Mr H. N. Moseley during the cruise, and despatched direct to Kew from various ports touched at by the Expedition. Preliminary notices of these collections, and notes by Mr Moseley on the general aspects of the vegetation of many of the places visited, were from time to time published in the Journal of the Linnean Society.[2]

The Continental botanical collections made during the voyage being very fragmentary, it was determined to limit these Reports to a review of the Insular Floras which came within the range of the Expedition, combining for this purpose the materials already in existence at the Royal Gardens, Kew, and at the British Museum, with the new facts brought to light by the Challenger collections.

The task of preparing these Reports dealing with the Insular Floras was, on the recommendation of Sir Joseph D. Hooker, K.C.S.I., C.B., F.R.S., intrusted to Mr William Botting Hemsley, A.L.S., who writes—

"When asked whether I would undertake to report on the Botany of the Challenger Expedition, the report to be restricted to Insular Floras, I unhesitatingly replied in the affirmative, because I felt assured of the friendly assistance not only of the botanists at Kew and the British Museum, but also of various specialists in cryptogamic botany. In

[1] Narr. Chall. Exp., vol. i., 1885, p. 27 *et seq.*

[2] For a list of these publications see Narr. Chall. Exp., Bibliography, Appendix VI. pp. 1053–1063.

this I was not mistaken; and it is now a pleasant duty to record my obligations and convey my thanks to those gentlemen to whom I am indebted for giving me the benefit of their experience, and thereby adding greatly to the value of my work. From long association with Sir Joseph Hooker in botanical work I had become, through his influence, particularly interested in the study of Insular Floras—an interest first awakened when I had the advantage of examining with him, now more than twenty years ago, a large number of New Zealand plants in connection with his Handbook of the Flora; but it was only as I advanced with my present work that I more fully realised the difficulties of the task before me, and the impossibility, notwithstanding that I was receiving so much help from others, of my being able to accomplish it in a manner wholly satisfactory to myself. As I proceeded, facts accumulated to an unexpected extent, and the number of questions and issues involved increased at every step. At first I was rather inclined to speculations; but I soon became aware that a careful collection of facts, and a conscientious examination of the evidence upon which certain theories and statements connected with Insular Floras had been founded, would be of more value than a speculative treatment of the subject. Imbued with this idea, I have to a great extent left the facts to speak for themselves; yet, without attempting a final solution of the many problems which I encountered, I have not altogether abstained from expressing my own opinions, nor from pointing out what appeared to me the correct deductions from the facts adduced. This change in the method of treatment will explain any little inequalities in the work, because the first part was printed before the writing of the second was finished, and the second was printed before the writing of the third was begun, while the Introduction was mainly written after the whole of the other was in type.

"Due acknowledgment has been made in the proper places of information extracted from published works and unpublished documents, as well as to contributors of dried plants from the various islands, so that it only remains for me to mention those who have afforded me active help—help which has saved me from many a pitfall, and largely compensated for my own inexperience in some branches of botany, and for which I am glad of this opportunity of expressing my sincere thanks.

"The work was intrusted to me under the superintendence of Sir Joseph Hooker, and I am under special obligations to him for his guidance, for placing at my disposition all his notes and references relating to Insular Floras, and also for reading the proofs as they issued from the press. I had hoped that he himself would write the Introduction, but his multifarious duties rendered it impracticable. Professor Oliver's aid I cannot overestimate, for he has throughout permitted me to consult him upon points of detail as they arose, and as we were usually working in the same room I have profited by it on numberless occasions. Mr W. T. Thiselton Dyer, who has taken the greatest interest in the work from the beginning, has also read the proofs and assisted me in many ways, more especially in searching out interesting facts bearing upon my subject from the voluminous official

correspondence at Kew. Mr J. G. Baker has given me direct help in drawing up the lists of ferns; Mr Mitten in mosses and liverworts; the Rev. J. M. Crombie in lichens, and Dr M. C. Cooke in fungi; and these gentlemen, together with the Rev. M. J. Berkeley, Dr Nylander, the late Professor G. Dickie, and Dr Reinsch, have between them named all the cryptogams. In some instances I have ventured to add references to descriptions, and to give some of the more important synonyms, as well as the distribution of the species; but I have been careful to discriminate between their work and my own in order that they should not suffer from any errors into which I may have fallen. As mentioned elsewhere, Mr Carruthers and Mr Britten spared themselves no trouble in searching through the earlier collections at the British Museum, especially the Sloane Herbarium, for plants coming within the scope of my work; and I may add that more use might have been made of the British Museum collections of Polynesian plants, but as I had to deal with such a very small fragment of the Flora (Admiralty Islands only) it was not thought necessary, especially as Seemann enumerates, in his Flora Vitiensis, all the species he met with in the British Museum Herbarium. His work, however, is in a measure supplemented by a number of unpublished lists of comparatively recent collections of insular plants at Kew, partly in the general Introduction, and partly in the Report on the Botany of the South-eastern Moluccas.

"Finally, it gives me much pleasure to mention that Miss Matilda Smith has taken great pains with the drawings made from dried plants, and especially with the dissections of the flowers.

"With regard to the details nothing more need be said here, as everything is explained that seemed to require explanation in the body of the work. I may repeat, however, that full references are given in only one place for such plants as occur in more than one of the florulas contained in each part of the Reports."

The manuscript of this Report was received by me in instalments between 19th August 1884 and 26th February 1885.

JOHN MURRAY.

CHALLENGER OFFICE, 32 QUEEN STREET,
EDINBURGH, 1*st June* 1885.